



FRIDAY, FEBRUARY 15, 1878.

Contributions.

The Baggage-Car: Its Traffic, Occupants and Surroundings.

BY PAUL STORKE.

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III.

THE MILEAGE COUPON TICKET FOR BAGGAGE.

A very ingenious and convenient form of ticket has crept into use for the purpose, mainly, of accommodating the wants of commercial travelers and men of that character. The quantity of goods or samples carried by these agents greatly exceeds, in the majority of cases, the amount usually allowed to be carried free. In giving a rate for the transportation of goods, whether by passenger trains or otherwise, the quantity to be shipped and the distance to be carried are proper subjects for consideration, hence the necessity of making separate provision for the wants of the class of travelers we have mentioned. Instead of paying in cash, at local rates, from station to station as they proceed, they purchase at the headquarters of the company a ticket good for a certain distance for a specified quantity of baggage. Diminutive coupons are attached to this ticket or book, each coupon being good for one mile. If the extra baggage has been transported ninety miles, ninety coupons are torn out of the book by the agent. The ticket described is commonly called a mileage ticket.

HOW THE MILEAGE TICKET IS USED.

Each company is required to fix the limit of baggage which persons holding mileage tickets may transport free. We will suppose this limit to be fixed at 250 pounds. The ticket is issued for say 500 pounds. If the amount of baggage presented does not exceed 250 pounds, then no charge is made. If it does exceed 250 pounds, then coupons should be detached.

When a mileage ticket is presented by the holder of a proper passage ticket, the agent should see that the weight of the baggage exceeds the limit the passenger is entitled to pass free. If it does, coupons should be torn out in consecutive order for the number of miles the baggage has been transported, each coupon being good for one mile or fraction of a mile. It is a part of the agreement that, when the distance the baggage is to be transported is three miles or less, charges will be made for three miles.

In the event the baggage weighs more than the amount called for by the mileage ticket, the excess should be collected in cash and the official issuing the ticket, notified of the holder's attempt to defraud the company. The charges for such excess should be reported the same as ordinary baggage.

Mileage tickets are not valid when presented by other than the person or persons in whose favor they are made. If presented by any other person cash should be collected and the General Baggage Agent or official issuing the ticket notified of its improper and unauthorized use.

Coupons should not be detached from the ticket except by the agent, as they are not valid when presented to the agent detached from the ticket.

The mileage ticket should be taken up by the agent and returned to the Ticket Auditor when the coupons have all been detached, or the time for which the ticket was issued has expired.

To prevent the use of counterfeits, agents should see that the ticket is signed by the right official and properly stamped.

The mileage tickets described are bound in book form, twenty coupons (miles) to a page. The tickets are usually issued good for one thousand miles, i. e., there are one thousand coupons attached. There is, however, no reason, except the expense, why the tickets should not be provided for distances varying from one hundred miles to three thousand miles.

The first page of the mileage ticket (book) describes the number of the ticket (each coupon attached bears a corresponding number), the name of the person to whom issued, the weight of baggage to be transported, etc.

In addition to this, each company should require the holder of a ticket to sign a contract specifying the limitations of the ticket and the responsibility of the company; this contract should recite the consideration or price paid for the ticket. This contract should be transmitted for record to the Ticket Auditor by the official selling the ticket; this is necessary to secure a proper check upon such official, and any attempt to secure a check is incomplete without it.

A company should always require similar articles of agreement to be signed and filed when the price to be collected for a thing by an official is discretionary with him. Such a rule would, in the main, protect the company and save the official from distrust.

Reference has already been made to the desirability of inserting an auditor's check in the ticket book. The auditor's check should recite the particulars of the ticket. It is simply an extra leaf describing the name of holder, how much baggage he is entitled to, the number of miles the ticket is issued for, the name of the official issuing the ticket, and the date of issue. When the ticket is first presented for use the auditor's check should be detached by the agent and forwarded to the Ticket Auditor. The possession of this information enables the accountant to detect counterfeits or raised

tickets, and it is also a necessary part of the check on the official issuing the ticket.

And for the same reason, as already suggested, all tickets, orders, permits or franks issued that are good for more than one trip should have an auditor's check attached. This auditor's check is essential to a prompt and complete audit of accounts.

ANOTHER FORM OF BAGGAGE PERMIT.

The quantity of extra baggage which a commercial agent, traveling through the country, will have to transport will vary greatly from day to day. The supply of goods which he is selling by sample will become exhausted, and he will, consequently, dispose of the samples in his possession, or he will add new articles to his stock as he progresses on his journey. Now a passenger is entitled to transport a certain amount of baggage. In consideration of the fact that such passenger travels constantly, as do many of our commercial agents, a company may permit him to carry more than the amount of baggage he would be entitled to as an ordinary passenger. It may enter into an agreement with him, that in the event the weight of his baggage or samples does not exceed say 250 pounds, no charge whatever will be made. To prevent any imposition on the company that might sometimes be successful through oversight or neglect on the part of agents, it is desirable to establish such a penalty as will prevent the holder of the permit we have described from attempting to procure, surreptitiously, the transportation of baggage in excess of the amount he is entitled to, without the payment by him of the usual charges therefor. To cover cases of this kind, it may be mutually agreed that in the event the quantity of baggage presented exceeds the amount agreed upon, if only by a pound, then the usual charges for excess baggage should be collected for the full amount presented, except in those cases where the holder of the order voluntarily notifies the agent of such excess; in such cases agents should charge only for the excess.

HOW THE USEFULNESS OF THE MILEAGE TICKET MAY BE INCREASED—ITS USE UPON SUBURBAN TRAINS.

The mileage coupon ticket seems to be exactly what is required to accommodate the merchandise and goods parcels that the wants and convenience of suburban residents and merchants require should be carried in the baggage car. The price could be adjusted for each ticket in accordance with the peculiar circumstances attending it, and the use of the coupons would obviate the delay and annoyance that would otherwise occur in making change in each instance.

There is no reason why the value of each coupon attached to the ticket, be they more or less, should not be greatly enhanced.

Instead of a coupon being good for one mile (as the present use of the ticket prescribes) it could be made good for any distance, say "from New York to Glendale."

Suburban residents and merchants would then purchase the tickets for use upon the trains patronized by them.

The tickets could be made good for any desired quantity, say ten pounds, or any multiple thereof.

If the weight of the merchandise or miscellaneous packages sought to be carried at any one time exceeded ten pounds and fell short of twenty pounds, two coupons instead of one could be detached from the ticket, and so on for each additional ten pounds.

The usefulness of the ticket in the hands of a skillful officer is capable of infinite expansion.

It would not be difficult to systematize the issue of these tickets so that coupons might be detached by the forwarding agents and pasted upon the package shipped by the suburban residents referred to; such a plan would require but an instant's time for its execution, and the company would be saved the expense and trouble of way-billing the traffic.

The ticket can readily be made a great convenience to the public and a source of new and important revenue to railroad companies.

(TO BE CONTINUED.)

Signals and Other Safety Appliances.

SHARPSVILLE, Mercer Co., Pa., Feb. 4, 1878. *
TO THE EDITOR OF THE RAILROAD GAZETTE:

To the philosopher pure and simple, this life could afford hardly another experience as thoroughly and unqualifiedly satisfying as that which would, according to theory, come to him should he ingeniously, and to the uttermost of his capacity, thoroughly act as, after conscientious examination of the premises, his judgment tells him he ought to act.

The philosopher would hardly thank you for applause for an act in his view clearly within the scope of his duty. He would say: "I have done this thing because I felt that I ought to do it; I indulge in no 'sentiment' about it. If I feel a thorough and unqualified satisfaction in consequence of having done it, this satisfaction is in character like that which I feel after having reduced an involved tissue of facts or a disjointed heap of incoherent parts, to a plain statement or a consistent whole. If I take credit to myself for having done my duty, or am willing to receive as compensation therefor the praise of others, I am no true philosopher."

But ordinary mortals are gratified and comforted and supported, if they receive from fellow-mortals acknowledgment of the fact that they have done the right, the proper, the fair, or the needed thing.

For some an expressed acknowledgment suffices; others have still a wary eye on the watch for some tangible reward.

I am not going to say that you are not a philosopher! Allow me to assert that I hold you to be a very good philosopher in physical science; but I don't believe that you have got so far in intellectual science as to be indifferent to intelligent commendation; and as I am strongly moved to commend, I risk this as a slight tribute to that persistent faithfulness to your ideas of the right, in railroad affairs, whether

in relation to the physics or the ethics thereof, of which every revolution, I mean to say every number, of your journal gives your readers ample evidence.

The immediate incentive of this letter lies in your recent editorial on "Railroad Signals," in which you, with admirable patience, present, for the consideration of those operating railroads, many facts and suggestions, important in this connection, that you have heretofore, again and again, urged upon their attention.

Grant that it is your duty to persistently present these facts and suggestions until those whose immediate duty it is to diligently seek perfection in every detail of the operation of railroads shall unite to devise, adopt and put into use on all American roads a code and system of signals, the rules and apparatus of which shall be so constructed as not to violate, nor call for the violation of, any of the laws of acoustics and optics; and, further, so as to render imperative for harm, when and where they exist, the several very material and frequent eccentricities or aberrations of nature affecting the composition of the human organs of sight; still your before-mentioned patience is admirable, and still, if my aforesaid estimate of your status as a philosopher is correct, even this individual acknowledgment of your merit will encourage you to persevere.

Go on! continue, as heretofore, to improve every opportunity for insisting on and illustrating the necessity for stout guard-chains on truck cars of all classes. A striking example of the good service done by sufficient guard-chains was had on the road of which I am engineer a few days ago. The forward truck of a box car, in a train of which the engine was on the rear, and pushing, left the rails, and before the derailment was detected ran about a quarter of a mile, most of the distance on a sharp curve, traversing in its course a piece of embankment about ten feet in height. Neither the truck nor the track was damaged; this result was secured by the use of the stout guard-chains that kept the truck from "swivelling."

Insist on well designed and well constructed guard-rails on bridges and trestles, and on the approaches to the same. As a result of inquiries made in the matter I am satisfied that a proper guard-rail, or good guard-chains, either of them, had either been in use, would have prevented a most disastrous bridge accident that occurred a few years ago on one of our great lines.

It is proper to say here, that the box car of which mention has just been made, as having good guard chains, belonged to the road on which the said bridge accident happened; and that all of the bridges on the same road, as far as I have observed, are now fitted with guard rails.

Insist on competent inspection of bridges, trestles, and roadway. The Tariffville affair is *apropos* here. After the Ashtabula disaster one read in the newspapers the statement that all the railroads, alarmed by the accident, at once had all their bridges carefully inspected. Judging from Professor Merriman's statement, copied in your journal from the Hartford *Courant*, the inspection of the Tariffville bridge, if any was made, was no better than no inspection. Looking at a thing is not inspecting it. And of what use is even an anxious and minute examination of a thing if the examiner has no competent knowledge of his subject?

I have heretofore, on several occasions, said something in your pages concerning inspection and railway and steamboat signals, and have always and persistently urged upon railroad companies the necessity that exists for simplicity, positiveness, and uniformity in signals, and for system, thoroughness and persistence in inspection of material, roadway and structures, and, following the course to which I adjure you to adhere, continue to do so.

In this connection, and while your editorial on signals is fresh in the minds of your readers, let me suggest that you reprint that portion of my article on "Crossing Signals," which describes the manner in which I would operate a grade crossing, and make thereon such comments as you deem pertinent.*

It is obvious enough that were the plan detailed in said article followed, no collision arising from a misunderstanding of signals or from error of judgment on the part of a crossing watchman in "giving the target," could occur at a crossing. Only a positive violation of rules, or a possible combination of untoward circumstances such as I have never known to occur, could bring about a collision. If, after a train starts to cross, a runaway train on the opposing road comes upon the scene, disaster may follow; but the adoption of the rules and practice described in the article will make the grade crossing that point on the average road at which there will be less chance of accident than at any other.

I have read with much interest that portion of the Ninth Annual Report of the Massachusetts Railroad Commissioners which treats of the need for "a comprehensive reorganization of the railroad service in so far as the relations of the corporations with their employees are concerned."

The Commissioners have treated this matter, and that of the strikes of 1876-77 generally, very rationally.

One can hardly, however, subscribe their assertion that during the last ten years a rapid progress has been made in the direction of the establishment, between the corporations and their employees, of a relation like that which would undoubtedly be established by the adoption and application of the "four simple principles" on which the Commissioners would base the aforesaid reorganization of the service.

If we include the entire railroad system of the country in one view, we may say that in the period named no material betterment in comity nor polity has been effected in the service. Here and there a railroad official, however pressed by other claims on his attention, has carefully and impartially

*This paper was published in the number for Aug. 15, 1874, page 319; we are not able now to reprint it.—EDITOR.

considered the matters which the commissioners discuss, and has, as far as he could, effected modifications of rules and practice wherever such seemed to him needed, but for the "better, more rational, and more charitable organization of the railroad service" that the Commissioners hope for, and believe to be coming, the organizer, or organizers, is, or are, yet undeveloped.

The Commissioners say: "Time in which to let things

work is the first requisite to all healthy progress." But things must be directed so that they may not work only as yeast works, to the production of ferment which is in its nature destructive, and which, if not arrested by a timely molding and baking of the mass, ends in spoiling all.

Time is necessary for the dissemination and development of ideas.

The Commissioners have, now, and very many others,

railroad men, have clear ideas as to what is needed to effect a great improvement in the direction indicated, and very many are ready and willing, and indeed eager, to go to work.

Let us seek to secure unanimity and concert of action in this behalf.

In the intention to aid in this I shall send you something for publication next week.

J. M. GOODWIN.

GILBERT ELEVATED RAILWAY ON SIXTH AVENUE, NEW YORK.

Constructed by the Edgemoor Iron Company and the Keystone Bridge Company.

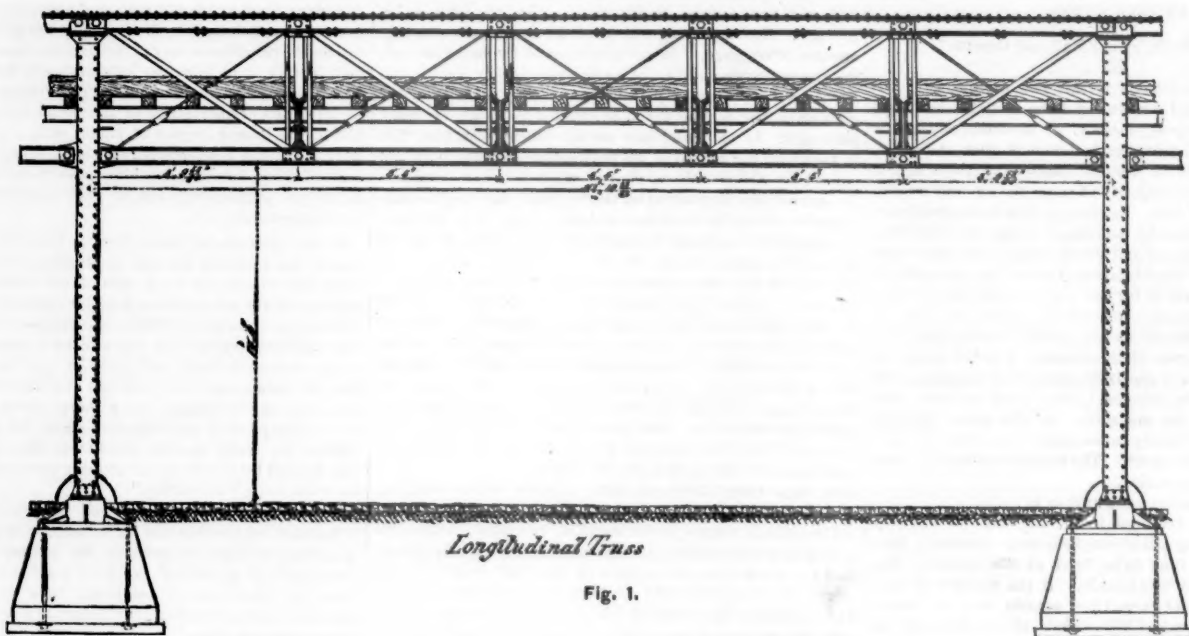


Fig. 1.

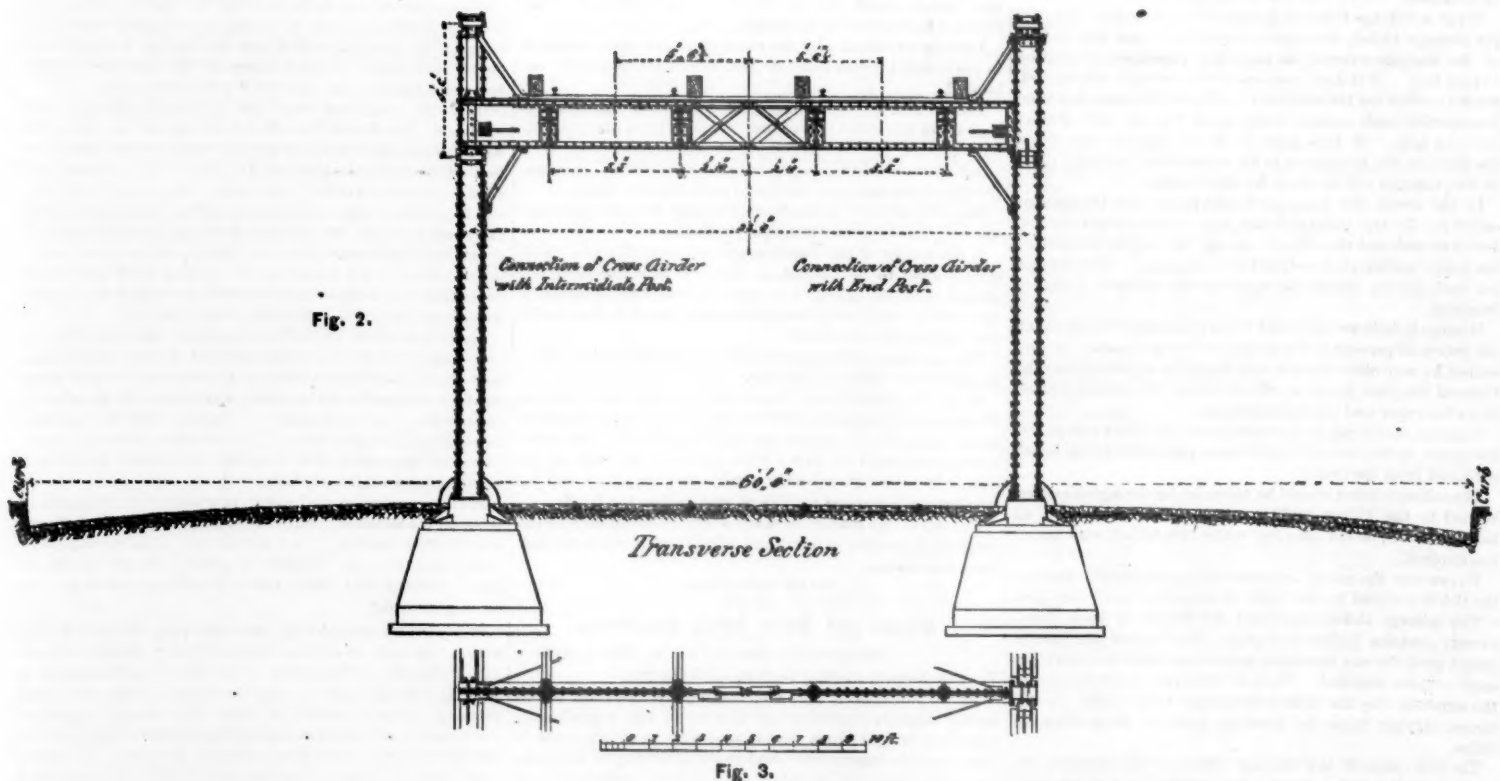


Fig. 2.

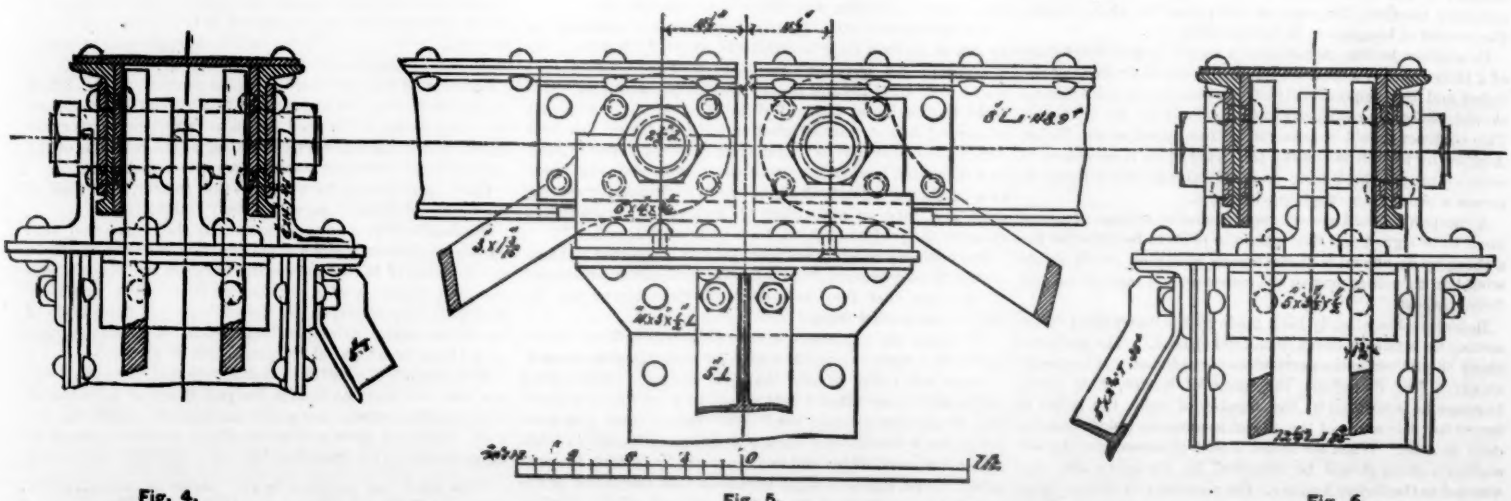


Fig. 4.

Fig. 5.

Fig. 6.

The Gilbert Elevated Railway.

We give herewith engravings of the structure which is now erected on Sixth avenue, New York, from Forty-second to Amity street. The upper portion of this, from Forty-second to Twenty-second street, was constructed and erected by the Edgemoor Iron Company, and that from Twenty-second to Amity street, by the Keystone Bridge Company. The engravings are made, however, from the drawings furnished by the Edgemoor Company.

Fig. 1 is a side elevation of one span of the structure; fig. 2 a transverse section, and fig. 3 a plan of one of the cross girders. Fig. 4 is a transverse section of a top chord near its end, showing the end pin; fig. 5 a side view of the ends of two contiguous top chords, and fig. 6 a similar section to fig. 4. Fig. 7 is a transverse section through one of the intermediate pins in the top chord, and fig. 8 a side view of the same; fig. 9 is a section through one of the pins in the bottom chord; fig. 10 is a side view, and fig. 11 a plan of the same.

The following specifications will give a better idea of the character of the structure than any other description could:

SPECIFICATIONS FOR THE GILBERT ELEVATED RAILWAY.

GENERAL PLAN.

The structure shall consist of two rows of columns supporting cross girders, and united to longitudinal girders; and the structure shall be adapted to support a double-track railway capable of carrying a rolling load of not less than one thousand five hundred pounds per foot on each track.

Fig. 7.

Fig. 8.

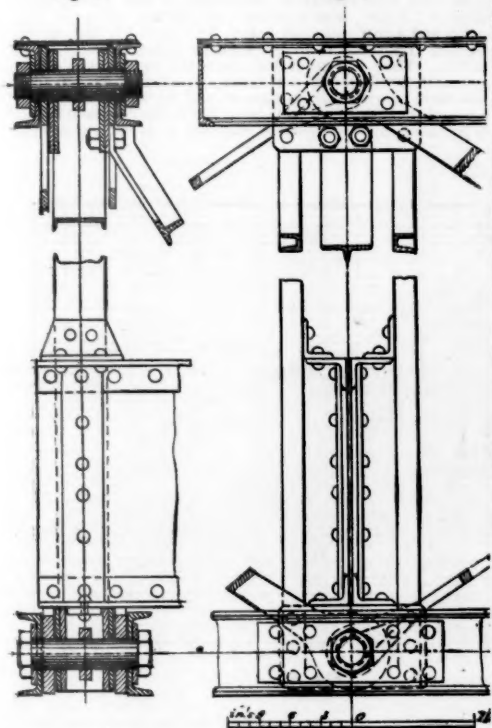


Fig. 9.

Fig. 10.

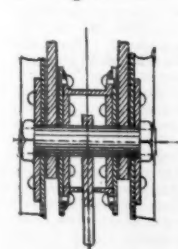


Fig. 11.

FOUNDATIONS.

The earth shall be prepared for the foundations by being made firm and solid, and it shall be covered with a bed of good hydraulic mortar four inches thick.

If any foundation come upon solid rock, vaults or other obstacles requiring a modification of plan, it shall be constructed to be equally good as if it came on solid ground.

If, in any case, the foundations are so located as to come in the way of water or gas pipes or sewers, the same shall be built so as not to interfere with any of them, or the pipes or sewers may be removed and made good. In either case the foundation shall be so constructed as to possess the same stability as if no interference had been made.

BED PLATE.

The masonry shall be capped by a bed plate of cast iron. This plate shall be fastened by four wrought-iron bolts; the upper surface of the bed plate shall be covered with a coat of the best hydraulic cement to protect it from damp and rust.

SIXTH AVENUE SECTION.

1. Columns.—The columns shall be about 43 feet between centres longitudinally, but the distance to be more or less as circumstances may require. They shall be about 22 feet apart in the clear transversely. The columns shall extend to the upper chord of the longitudinal girder, and the distance from the surface of the street to the under side of the girder shall be 14 feet, but more at such places as may be required by the gradients; the columns shall be composed of two 13-in. channel bars, and two plates 12 in. wide, four pieces of angle-iron bars and a plate to be fastened to the foot of the column, the joint being made water-tight; and the column to be fastened to the bed plate by bolts $1\frac{1}{4}$ in. in diameter; the upper part of the column to be fitted with such plates, angle-irons and brackets as may be required to

unite and secure the girders to them and to each other. The riveting of the columns to be spaced, 5-in. centre, the inside of the columns to be filled with the best hydraulic cement, suitable openings being made for filling.

2. Longitudinal Girders.—The longitudinal girders shall be pin-connected trusses about 8 ft. 2 in. deep, 5 ft. 6 in. vertically from centre to centre of pin, with a stiffened lower chord. The upper chord shall be composed of two channel bars, 8 in. deep, covered and united by a plate 12 in. wide, firmly riveted thereto; the channel bars to be reinforced wherever the pins pass through to such a thickness that the bearing surface of the pin shall be equal to the area of the eye bars, and to compensate for the section removed.

The bottom flanges of the channel bars shall be connected, at intervals, by plates 6 x 12 in. x $\frac{3}{8}$ in.

The bottom chord shall be composed of two channel bars 8 in. deep, and re-enforced at the pin holes as in the upper chord.

The pins for the ties to be 3 in. in diameter, accurately fitted to their holes, and provided with suitable hexagonal nuts at each end.

Each span of 43 ft. shall be divided into five panels.

The main ties adjacent to the columns shall be composed of two bars $3 \times 1\frac{1}{2}$ in.; the main ties in the second panels to be composed of two bars $3 \times 1\frac{1}{2}$ in.; the eyes of the first to be $1\frac{1}{2}$ in. deep, and of the second $1\frac{1}{2}$ in.

The counter ties shall be single bars one inch square, and shall be provided with suitable turn-buckles and jam-nuts.

3. Panel Posts.—The posts in the panels shall each be composed of two channel bars $5 \times 2\frac{1}{2}$ in. x $\frac{3}{8}$ in., weighing 33 $\frac{1}{2}$ lbs. per yard, fastened to the top and bottom chord by two pieces of plate iron, in such manner as may be approved, at each end of the posts.

4. Cross Girders.—The cross girders at the columns shall be about 22 feet long, and shall be composed of plates 24 in. deep by $\frac{3}{8}$ in. thick, middle panel to be lattice; the top chords shall be composed of two bars of angle iron 3×4 in., and the bottom chords of two bars of angle iron 3×4 in. x $\frac{3}{8}$ in., and fastened to the longitudinal girders and columns by two bars of angle iron about 22 in. long, and by T knee plates on the under side and by diagonal braces on the top, the top plate being about 8 ft. 6 in. below the top of the longitudinal girder.

5. Intermediate Cross Girders.—The intermediate cross girders shall be placed at the panel posts and shall be of the same dimensions as those at the columns; they shall be securely fastened to the posts of the longitudinal truss by angle iron bars about 4×3 in. x $\frac{3}{8}$ in., and to the upper chord of the longitudinal girder by diagonal braces, stiffened with angle-iron bars.

6. Connections between Girders and Columns.—The trusses of the alternate spans shall be rigidly fastened at each end to the columns, the other trusses to be free to move at each end sufficiently to allow for expansion and contraction from the effects of the temperature. The connections between the trusses and the columns to be through the end pins in both chords, and the chords shall not be riveted to the columns.

7. Seats for Ornamental Vases.—Over each of the columns and panel posts suitable fittings to be put in for setting and attaching ornamental vases.

8. Track Stringers.—There shall be four sets of track stringers, fitted one under each line of rails, their tops to be four inches below the top of the cross girders; they shall be composed of rolled I beams, 8 in. by about 4 in. x $\frac{3}{8}$ in., weighing 66 lbs. to the yard. They shall rest upon and be securely fastened to the cross girders and floor beams, by angle-irons at each end.

9. Diagonal Braces.—The entire structure shall be stiffened horizontally by two diagonal braces in each panel, composed of rods one inch square, and properly fitted with turn-buckles, and securely fastened to each other where they cross, so as to prevent clashing together.

CROSS TIES.

The cross-ties shall be of Southern yellow pine, sawed and planed smooth. They shall be 8 ft. 6 in. long; they shall be 6 x 7 in., and shall be placed 24 in. apart between the centres. They shall be securely fastened to the floor beams by hook-headed bolts and nuts, or by screw bolts, two bolts to each cross-tie, the bolts to be $\frac{3}{4}$ in. in diameter. The cross-ties resting on the cross girders to be of such reduced thickness as may be found necessary.

SAFETY GUARDS.

The safety guards shall be composed of Southern yellow pine, 7 x 8 in. in section, sawed and planed smooth. They shall be placed on the outside of each line of rails, notched and let down on the ties one-half of an inch, and secured by bolts to them by screw bolts at the ends of the ties, and at intermediate points. The bolts to be $\frac{3}{4}$ in. in diameter. The timbers shall be in lengths not less than 30 feet, the joints to be scarfed and well bolted together, continuity being especially required. A cap of white oak, 7 in. wide by 2 in. thick, shall be fitted on the top and fastened to the guard timbers by spikes, their heads sunk below the surface. Caps and timbers to break joints, and the joints of the caps to be half checked, and fastened by half inch bolts.

RAILS AND FASTENINGS.

Rails.—The rails shall be steel of the best quality and approved pattern, suitable for the purpose, and shall weigh about 56 lbs. to the yard, and be not less than 37 ft. long. On the curves they shall be accurately bent to curve before they are laid.

Fastenings.—Chairs, connections and fastenings shall be of the most substantial and approved character, and of such forms and patterns as shall be provided.

Next week we will give engravings of that portion of the structure erected on West Broadway.

The Depreciation of Cars with Age.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I was much interested in your report of the November meeting of the Master Car-builders' Association, at which the subject of car depreciation was discussed, and also in your subsequent article on the same subject.

A standard measure of depreciation would no doubt be very desirable in settling claims for cars damaged and broken on foreign roads, as well as for the appraisement of rolling stock, and I know of no better way to accomplish that end than by a full and free discussion of the subject by practical railroad men.

One great difficulty in the way of calculating the cost and maintenance of cars for a series of years is the fluctuating character of our currency and the instability of prices. In 1865 a box freight car cost \$1,200 and government tax. In 1870 a similar car could have been bought for \$800, and at the present time for from \$500 to \$550. The cost of repairing cars has been, of course, subject to the same fluctuation.

Under such a sliding scale of prices it is a difficult matter to estimate the cost of the maintenance of a car fifteen or

twenty years old in terms of the present hard-pan values. However, as prices have in all probability touched bottom, there is good reason to presume that calculations based on the present cost of labor and materials will answer for some time to come.

In estimating the depreciation of rolling stock, I fail to see the propriety of logging the interest account into the question. When a merchant takes an account of his stock he does not first ascertain what he paid for each piece of goods and then cast the interest on that amount to fix its price, but, instead, he appraises it at what he thinks it will bring in the market, or at a price at which it can be replaced. In like manner the appraiser of rolling stock fixes its value, based on its condition and the cost of replacing it.

I think, Mr. Editor, that your plan of computing interest on cost and value of service has a tendency to befog and unnecessarily complicate the subject, and has no legitimate connection with it. Of course the matter of interest would be a proper consideration for a rolling stock company in fixing the rental value of their cars, but as the interest on cost is one of the items which go to make up the ordinary mileage charge for the interchange of cars—as I believe it is—I see no propriety in considering it in estimating car depreciation.

Some years ago Mr. R. Price Williams read a paper on the Maintenance of Rolling Stock before the British Institution of Civil Engineers, in which he thoroughly discussed the subject of its depreciation, and illustrated his views by diagrams representing graphically the deterioration of the various parts by wear and the renewals required to maintain the working efficiency of the car or engine. Mr. Williams as-

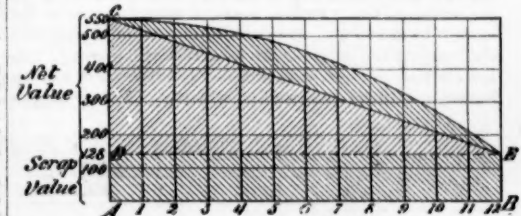


Fig. 1.

sumed that the depreciation or "dilapidation" (as he termed it) of rolling stock was slow and imperceptible in the first years of the life of the car or engine, and that it increased rapidly in the latter years of its life, as it approached the end, and that the ratio of this dilapidation may be obtained by squaring the years of its life. For example, if the life of a car is reckoned at 10 years, the dilapidation at the end of the first year would be represented by $\frac{1}{10}$ of its net cost, the second year $\frac{4}{10}$, the third year $\frac{9}{10}$, and so on to the tenth year, when it would be $\frac{100}{10}$, and nothing of value would remain but the scrap.

In this and all subsequent calculations it is taken for granted that sufficient repairs are made to the car to maintain it in proper running order.

Assuming that the life of a car is 12 years, its original value \$550, and its scrap value \$128, then on diagram Fig. 1 the horizontal line AB will represent the life in years, the vertical line AC will represent the value of the car, and AD the scrap value. On the assumption that the depreciation is uniform, a diagonal line drawn from C to E will represent the rate of such depreciation from full to scrap value, and the ordinates cut by it will represent the value at the end of each year.

The curved line CE will represent the rate of depreciation assumed by Mr. Williams, and the ordinates cut by it the amount of depreciation for each year. In the first case the depreciation at the end of the sixth year, or one-half the

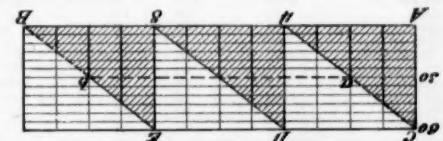


Fig. 2.

life, will be 50 per cent. of the net cost, and in the latter case it will be 25 per cent. of the net cost.

Mr. Williams admitted that this theory of accelerated deterioration was only an assumption, and in the discussion which followed D. K. Clark and others questioned its correctness; but although Mr. Williams may be wrong, his graphical method of delineating the wear and renewal of the various parts of an engine or car is a convenient one, and I shall use it with some modifications in illustration of the subject in preference to wordy explanations.

In Mr. Williams' diagram the lines indicating wear and renewal instead of being plain, straight or curved lines are indented or serrated, rising and falling with the ups and downs of the condition of the various parts, and one difficult to trace and read on that account. I think it will be as well to simplify them by running an average line cutting off high points and filling up depressions without affecting the accuracy of the result. For example, if the average durability of car wheels is four years, their net value when new \$60, and the life of the car twelve years, then the car will wear out three sets of wheels and the depreciation and renewal of these wheels are shown by Fig. 2, where AB = life of the car = 12 years, and AC = net value of the new wheel = \$60. The diagonal lines CD, DE, and EF will represent the rate of depreciation on the theory of uniform wear, and the vertical lines DG and EH will represent the renewals. The intermediate ordinates show the value for each year.

The average condition of the wheel is that of half-worn wheels, and their average value \$30, or one-half net cost.

The dotted line *C a b B* outlines the average value, and for all purposes this average line may be used in place of the intended line in constructing diagrams. It will be seen that the wheels start from *C* at full value and reach the average or half value at the end of the second year, which they hold until the tenth year, after which they descend to the condition and value of scrap at *B*. On this principle and on the assumption of uniform wear, I make diagram Fig. 3, using the figures given in the table furnished by Mr. Garey, which are based on a car-life of twenty years, a first cost of \$550, and a scrap value of \$128.

It will be seen, by inspecting the diagram, that the line of depreciation falls rapidly until it reaches the fourth and fifth years, up to which time no renewals of consequence have been made, and that it crosses the diagonal line *C F E* on a tangent, and again curves the other way, at the fifteenth year, after which renewals gradually cease, and that it drops rapidly to zero at *E*, the end of the life. The ordinates of these two curves are equal and balance each other, and consequently the diagonal line *C F E* is a correct mean line of depreciation, and the ordinates intercepted between the diagonal and base line are correct average measures of the value for each year of life. The average value of the car in mid-life is \$340, or 62 per cent of the first cost, and the yearly depreciation is $\frac{1}{20}$ = \$27.50, or about 5 per cent of first cost. Mr. Garey makes the average yearly depreciation \$53, and I presume does not give the car credit for the renewals required to maintain it in good running condition.

I am of the opinion that the average life of a box freight car will not reach twenty years, at least on our Western railroads. Of course much is owing to the mileage made by the car during its life. Fifteen years, I think, is nearer the mark. I consider also, five years as the life of wheels, and ten years the life of axles. An iron truck will generally outlast the body of a car, with probably one renewal of wooden bolsters and partial renewals of oil-boxes. I have made a

ment, in the trusses. In adjusting or screwing up a truss, the rods may be strained to such an extent that the application of the load will work them far beyond the proper limit. The opposite of this, and what appears to have been the fault in this case, is to let the bridge stand without adjusting the rods, as they become loose from shrinkage of timber and other causes. All wooden bridges require occasional adjustment; if this is neglected, the rods become so loose in time that the braces will come to a bearing with a shock as a train advances over the bridge. Here I think is an illustration of the fact that the repeated impact of a load (not of itself sufficient to cause permanent set), after the elastic limit of the rod has been passed, will surely and speedily destroy it. The elastic limit of the rods in the Tariffville bridge had, doubtless, been exceeded before it fell, though the ordinary loads were under that limit. The continued impact, caused by want of adjustment, at last caused it to fall. No doubt this bridge was insufficient in nearly all its parts, but the cause mentioned above played an important part in its destruction.

G. H. KIMBALL,
Civil Engineer.

American v. English Locomotives.

The American press has recently given much prominence to the fact that Messrs. Baird & Co., proprietors of the Baldwin Locomotive Works, Philadelphia, U. S., have obtained a heavy order for engines from the Russian Government. We do not know whether any attempt was made by Russia to place this order in this country, or whether any of our locomotive builders tried to obtain it. Operations of the kind are usually regarded as private; and the public seldom or never hear that a firm has sought an order and failed to obtain it. Be this as it may, it is certain that the order would have been very acceptable in this country, where we are not overwhelmed with work. It is not remarkable that America should make locomotives for Russia, the United States having enjoyed the benefits of Russian patronage since Messrs. Winans first supplied the Muscovites with en-

ormous. In the United States goods trains are run at much lower speeds than they are in this country, and they are much longer and heavier. As many as ninety coal wagons are not unfrequently to be found in a single train, and eight or ten miles an hour is deemed a fair speed. We have lying before us, while we write, a drawing of what is considered by many persons the best type of goods engine in the world. Anything more unlike an English goods engine it would be difficult to imagine. Scores of these engines—known as the "Consolidation" class—have been built by Messrs. Baird. The engine has outside cylinders, 20 in. diameter, and 24 in. stroke. It is carried on ten wheels, eight of which, all coupled, are 4 ft. in diameter. Three pairs of these are disposed between the cylinders and the fire-box, while the axle of the fourth pair runs across below the leading end of an enormously long inclined grate. The fifth pair, 30 in. in diameter, runs on a species of bogie or "track feeler," just in front of the cylinders. The rear and second pairs of driving wheels have flanged tires $5\frac{1}{2}$ in. wide, while the front and main pairs have smooth tires 6 in. broad. The truck has a swing bolster and radius bar, equalized with the leading driving-wheels. The total wheel base is 21 ft. 10 in., but the rigid wheel-base, that is to say, the distance between the trailing and second pair of drivers is only 9 ft. 10 in. long. This engine weighs, in working order, a little under 43 tons, of which nearly 39 tons are carried on the drivers, and four tons on the bogie. The weight on the drivers is very evenly distributed, and is less than 5 tons on any wheel. It would be very difficult, we think, to design an engine better able to accommodate itself to a bad road, and more suitable for the exercise of a great tractive force. The only locomotive ever seen in this country fit to compete with it in these respects being the Fairlie engine. "Consolidation" engines are guaranteed by their builders to haul 2,000 tons gross on a level or 285 tons up an incline of 1 in 53, and while they will traverse curves of six chains radius with perfect ease, they have actually taken a gross load, independent of the engine, of 268 tons up an incline of 1 in 45 $\frac{1}{2}$ with a pressure of 120 lbs., the speed being seven and a half miles per hour. This engine is not a pretty engine. Regarded from an aesthetic point of view, it is a failure. There is a great deal about the way work is put together in which will not satisfy English eyes; but those who have enormous quantities of coal to transport care for none of these things, and as they find in the "Consolidation" type cheap and serviceable engines, it is not remarkable

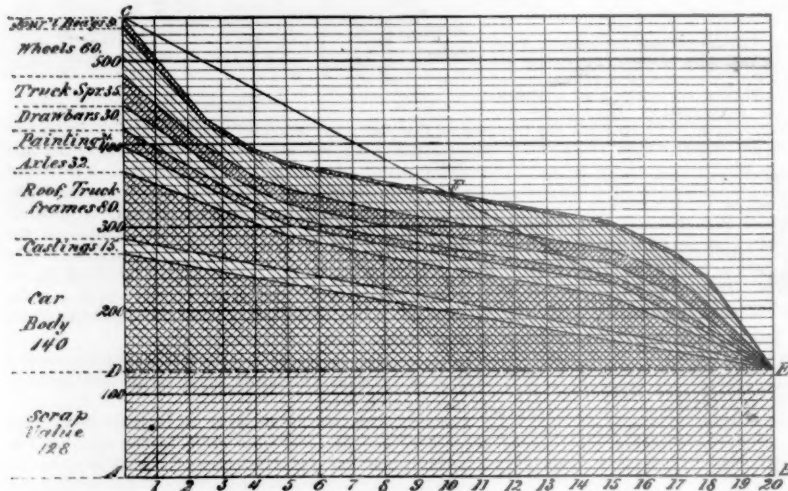


Fig. 3.

table and diagram (Fig. 4) on that basis and changed the items of cost somewhat, viz.: cost of car, \$525; value of scraps, \$120; net cost, \$405; life, 15 years.

	Value of new parts of car.	Value of parts when thrown away.	Time required to wear out parts.	Net cost of renewal.
Wheels	\$105	\$45	5 years.	\$60
Axles	40	10	10 "	30
Journal bearings ..	14	5	3 "	9
Truck springs	35	5	15 "	30
" frames	75	15	15 "	60
" castings	25	10	15 "	15
Car-body	135	15	15 "	120
Roof	45	5	10 "	40
Drawbars	30	10	10 "	20
Painting	21	0	7 "	21
Total	\$525	\$120		\$405

Taking the diagonal line as the correct measure of average depreciation, as before, or, which is the same thing, dividing the first cost less the scrap value by the number of years of life, the value of the car at mid-life will be \$325, or 62 per cent, and the average yearly depreciation will be \$27, or a little over 5 per cent. of first cost. When the car is nine years and eight months old it will be worth one-half its original cost.

It appears to me that a simple and equitable settlement of car losses might be made on the foregoing basis, provided the condition of the car could be shown to be up to the standard, and with allowances where such is not the case.

The Tariffville Bridge.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In a previous article, giving the result of tests of rods taken from this bridge, it is stated that some of the rods were strained in the bridge to 22,612 lbs. per square inch of effective area; and that their elastic limit as obtained by experiment was 19,000 lbs. per square inch. Now how the true elastic limit can be obtained, after the rod has been continually exposed to a strain exceeding that limit, is not quite apparent. The true elastic limit of the material under consideration is somewhat greater than the result given above, and a little below the maximum working strain.

There is one cause which may have hastened the fall of this bridge, which appears thus far to have been overlooked. I refer to the adjustment, or perhaps the want of adjust-

ment, in the trusses. In adjusting or screwing up a truss, the rods may be strained to such an extent that the application of the load will work them far beyond the proper limit. The opposite of this, and what appears to have been the fault in this case, is to let the bridge stand without adjusting the rods, as they become loose from shrinkage of timber and other causes. All wooden bridges require occasional adjustment; if this is neglected, the rods become so loose in time that the braces will come to a bearing with a shock as a train advances over the bridge. Here I think is an illustration of the fact that the repeated impact of a load (not of itself sufficient to cause permanent set), after the elastic limit of the rod has been passed, will surely and speedily destroy it. The elastic limit of the rods in the Tariffville bridge had, doubtless, been exceeded before it fell, though the ordinary loads were under that limit. The continued impact, caused by want of adjustment, at last caused it to fall. No doubt this bridge was insufficient in nearly all its parts, but the cause mentioned above played an important part in its destruction.

The English locomotive engine is the best machine of the kind in the world, if we consider only its material and its workmanship. Given a road as perfect as the engine in workmanship and material, and nothing better than the combination can be desired. But without the good road, and in the absence of special conditions of traffic, the English locomotive is not the best. The modern express four-coupled engine on six wheels, for example, is quite unsuitable for any but straight and sound roads. Attempts have been made over and over again to use abroad engines built on English designs, with rigid frames and a rigid wheel-base, and they have invariably failed. A notable example is supplied by Canada. It is not too much to say that traffic could not have been carried on with any chance of commercial success in that country with English engines. They were tried, and they failed. An exhaustive report on one cause of their failure will be found in the *Engineer* for April 13, 1877, so we need not go deeply into the subject here. Briefly stated, English engines are altogether too rigid to traverse with safety roads so bad and uneven as those which are to be found extending over immense tracts of country at the other side of the Atlantic, the imperfections in question being in a great measure the result of severe frosts. An American engine works like a basket as compared with an English engine. After it has seen a little hard service it often becomes to English eyes a very ramshackle affair, and when running it twists and wanders and wriggles at its work in a sufficiently curious fashion. But it will not run off a track on which an English express engine could not be kept for a mile. It does not break down. It will make very long runs at comparatively high speed, and it is, despite appearances, in all respects a machine on which it is possible to rely. Add to this, that it costs much less to build and that it can be sold much cheaper than an English locomotive, and it is easy to understand why our own builders cannot obtain foreign orders.

If we turn to goods engines again, it will be found that the American freight locomotive is comparatively rough and ungainly in appearance, but that its capacity for work is

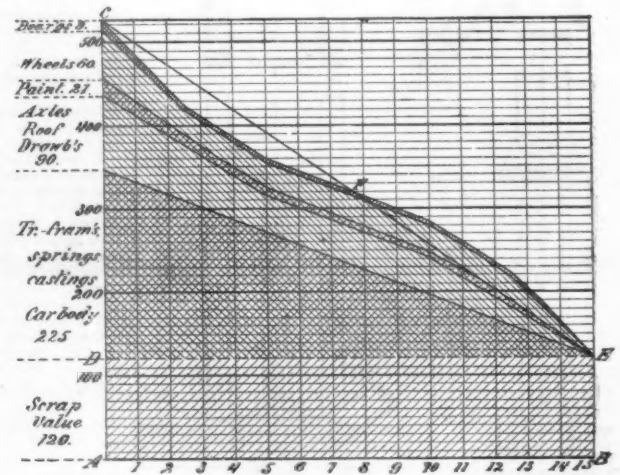


Fig. 4.

that they buy them, and entirely neglect goods engines of the type used on our lines, with six coupled 5 ft. wheels, and a rigid base 14 ft. or 15 ft. long.

Now, we would not have either our English or American readers run away with the idea that we are disparaging English and exalting American practice. We cite Messrs. Baird's engine only to illustrate our argument. An English first-class locomotive is as superior in a hundred respects to an American engine such as we have just described as a chronometer is to a lever watch. But does it follow that as we cannot sell chronometers because they are too dear, and are quite unfitted for rough work, we are not to make and sell cheap and durable lever watches which will stand a great deal of hard usage, and are precisely suited to the requirements of those who buy them? On the contrary, we would urge on English firms the expediency of beating America on her own ground, and building "Consolidation" or any other engines that we use the words in their best sense—will sell. Slight modifications might easily be introduced on American practice, which would tend to improve the engine; but care must be taken not to reject cheap methods of putting work together, or cheap materials, because such things do not run with English ideas of mechanical fitness. If, for example, a purchaser refuses to pay for a copper fire-box, why not give him one of Lowmoor or Bowling iron? If he is satisfied with cast-iron wheels, why insist that he must have wrought-iron wheels? Our readers may rest assured that it is quite possible to build as good—and even cheaper—locomotives in this country as can be turned out in the States; but to do this we must abandon certain insular prejudices in favor of first-class work, and content ourselves with something not less excellent in its way, but different in its way from that to which they are accustomed.

In point of fact, so long as engines can be had for moderate prices, which will do what is required of them, cost little for repairs, and keep on a bad track, the railway companies of such countries as America or Russia care for little else. To bring this truth home to our readers, we can give two illustrations. On several of the United States railways the practice of cleaning engines, "or wiping them down," as it is called on the other side of the Atlantic, is being abandoned to save money. What would an English locomotive superintendent say if he was told by his directors that he could have in future no engine-cleaners? That he might paint as much of his engine as he could, and that for the rest it might go dirty. It is fair to say that this policy has met with some opposition in America, but that it has been proposed, and even actually put in practice, shows how out of place English mechanical refinements would be in engines intended to compete with those built at the other side of the Atlantic. Our second illustration is supplied by the small importance attached to the economy of fuel, the consumption of coal on most of the American railways being so extravagant that it would not be tolerated for a month on our English railroads. Mr. Frank Thompson, General Manager of the Pennsylvania Railway Company, has recently introduced the premium

system to cut down coal bills, and our readers will hold that it was time some step of the kind was taken, when we say that the average consumption per train mile on the United Railroads of New Jersey in January, 1876, was as much as 51.3 lbs. of coal, the average train consisting of 4.5 cars weighing probably about 80 tons. In July of the same year the consumption was 47.5 lbs. of coal, the trains consisting of 5.4 cars weighing about 96 tons. The coal burned per goods-train mile in the same month reached 85.47 lbs. and 57.2 lbs., the trains consisting of 23.1 and 24.1 cars. This, be it remembered, is since the premium system was introduced. In 1875 goods engines hauling 20 cars burned as much as 94 lbs. of coal per mile, and passenger engines with 4.7 cars consumed 55.5 lbs. of coal per mile, or very nearly twice as much as suffices the North British Railway Company for working the exceptionally heavy road between Edinburgh and Carlisle.—*The Engineer.*

Workingmen's Trains.

[From the Ninth Annual Report of the Massachusetts Railroad Commissioners.]

The fifth year of the experiment in running the so-called workingmen's trains was completed on the 1st of December. Of the three trains of this description referred to in the last report of this Board, that on the Old Colony road was discontinued on the 15th of June last, after two full years of trial. The following are the statistics in relation to it:

Number of Passengers for each Month.

MONTHS.	1875.	1875-6.	1876-7.
December (1875-6).....	.....	1,723	1,953
January.....	.....	1,451	2,084
February.....	.....	1,452	1,939
March.....	.....	1,730	2,166
April.....	.....	1,832	2,106
May.....	.....	1,983	2,227
June.....	.....	2,056	1,201
July.....	2,055	1,886	.....
August.....	2,069	1,582	.....
September.....	2,323	1,822	.....
October.....	2,063	1,953	.....
November.....	1,687	1,711	.....
Total.....	10,227	21,181	13,896

Distance, Boston to Mattapan.....7.67 miles.
Number of trips run (Dec., 1876-June, 1877).....342
Number of miles run (Dec., 1876-June, 1877).....2,623
Average receipts per mile (Dec., 1876-June, 1877).....\$4.81 cents.
Number of stations served.....10
Gross receipts of train (Dec., 1876-June, 1877).....\$913.07

It will be observed that at no time while this train was run did it carry enough passengers to encourage the corporation to continue it, and the number showed no signs of increase. It was larger in the third month of the experiment than in any other before it was brought to a close. The average number of passengers to a trip was but 40, or less than enough to fill one car. Under these circumstances it was apparent that the conditions as respects population and employment in the district served by this train were not such as required the peculiar accommodations afforded by it.

Of the two other workingmen's trains, that on the Eastern Railroad between Boston and Lynn is the longest established, and has been the most successful. During the last year the rates of fare charged upon it were again raised, and they now amount to 6 cents, instead of the original 5 cents, for a trip between Boston and all points south of Linden (6 miles); while between Boston and all points north of Linden, to Lynn, the fare, which last year was fixed at 8 cents instead of 5, was this year raised to 10 cents. As owing to the sharp competition between the Eastern and the Boston, Revere Beach & Lynn roads, the regular fare by all trains between Boston and Lynn was, during a portion of the year at least, 10 cents, there was no longer an inducement for any one to use, to or from that point, the workingmen's in preference to the regular trains. So far, therefore, as travel between Lynn and Boston was concerned, the distinctive features of the train ceased to exist. The use made of it during the last year was, however, still very considerable, and much larger than during the year preceding; while the receipts from it have increased very considerably. The total number of passengers carried was 255,760, of whom no less than 215,550 were to and from points between Boston and Linden, a distance of six miles or less, at a fare of 6 cents a trip. The average receipts were \$1.89 per mile run, as compared with \$1.37 for the preceding year. The average receipts per mile on all the passenger trains run on the Eastern Railroad was, during the year, \$1.36; from which it would appear that the workingmen's train earned 53 cents per mile run more than the average. There were 407 passengers carried to each trip, being more than enough to fill six cars. Under these circumstances, as the result of five years' trial, the Commissioners think it is but reasonable to say that the conditions making it advisable to supply a workingmen's train in the immediate vicinity of Boston do exist in a permanent form on the Eastern Railroad. A population which the train accommodates is already there; and the fact that such a train is run, and will continue to be run, undoubtedly is a great inducement to the increase of that population.

The workingmen's train on the Boston & Maine road had been running two full years on the 30th September last. The results during that time are shown in the following table:

Number of Passengers for each Month of Operation.

MONTHS.	1875-6.	1876-7.	1877.
October.....	3,102	10,815	14,233
November.....	3,048	9,447	12,711
December.....	4,935	8,001	.....
January.....	4,035	7,512	.....
February.....	4,470	8,064	.....
March.....	7,299	10,278	.....
April.....	9,846	12,003	.....
May.....	10,287	13,587	.....
June.....	10,670	12,735	.....
July.....	9,984	11,961	.....
August.....	12,181	15,480	.....
September.....	12,072	15,003	.....
Total.....	92,529	135,486	26,964

Distance from Boston to Reading.....12.25 miles.
Number of trips run.....628
Number of miles run.....7,537
Average receipts per mile.....\$1.39
Number of stations served.....14
Gross receipts of train.....\$10,469

Though not used to the great extent of the similar train on the Eastern road, it will be noticed that during the year, as compared with the preceding year, the gross receipts per mile from this train increased from \$1.01 to \$1.39, and were larger by 4 cents per mile than the average passenger-train receipts on the Boston & Maine road. There were 226 passengers to the trip, being enough to fill 4 cars. The officers of this road have expressed recently an earnest desire to discontinue the train, on the ground that their returns from the

stations served by it indicate that persons are traveling on it, at the reduced rates, who formerly purchased season-tickets at the regular rates. It is claimed that during the last year the receipts from the sale of regular season-tickets to and from these stations fell off \$4,863.81, while the receipts from the sale of tickets for the workingmen's train increased \$3,791. It is very possible that there may be a connection between these two facts, though it would be premature to conclude that such is the case without first analyzing the receipts from all the points referred to, and comparing them with the receipts from other points. During the last year there seems to have been a general decrease in local passenger earnings on all the Boston roads. The net decrease from the towns referred to in the case of the Boston & Maine road amounted to about 3 per cent. It may well be questioned whether this is more than the average decrease which the Boston & Maine suffered during the year in all branches of its business. Indeed, the returns of that company indicate the exact opposite to this. In place of the 3 per cent. decrease, which is here attributed to the presence of a particular train, the aggregate falling off for the year in the total gross transportation earnings of the Boston & Maine road from those of the year previous, were 4.6 per cent.; while as respects the earnings from its general passenger business the case was still worse. Those from the local passenger traffic fell off 6.1 per cent., and those from the through passenger traffic 10.7 per cent. So far, therefore, as the figures now in possession of this Board would justify an inference, it would seem to be that the passenger earnings from the points served by the Boston & Maine workingmen's train had, instead of falling off unduly, sustained themselves, for some reason, during the last year exceptionally well.

There have been few matters connected with railroad experience in Massachusetts during the last six years which have excited so wide-spread an interest, or in regard to which the members of this Board have received so many requests for information, as these workingmen's trains. As, in view of the length of time the experiments have now been on trial, it is improbable that much space will be hereafter devoted to them in the reports of this Board, the Commissioners take this occasion to say something of their origin, and of their own connection with them. The idea of these trains did not originate with the Railroad Commissioners. It was borrowed from the Acts of Parliament and the experience of English railroads having termini in London. The first measure looking to their compulsory introduction on the Massachusetts roads was brought forward by the Hon. Josiah Quincy, in 1871; but no legislative action was taken upon it. The next year, however, a bill (Acts 1872, chap. 348) was passed, providing that the railroads should run them in certain contingencies. At that time this Board felt, and took occasion to express, grave doubts whether there was any necessity for this legislation. The conditions, both as respects population and social habits, which had led to the establishment of these trains in England did not, it was believed, exist here. Nevertheless, the law was passed, and it only remained to do what could be done to give the experiment contemplated in it a fair trial. As passed, the law could not be made operative. No train ever has been, nor, it is believed, ever would have been run under its provisions. Taking advantage, however, of circumstances, this Board induced the managers of the Eastern Railroad to try the experiment in the form in which it was tried upon that road. The result was a surprise to every one. Subsequently, still through the active intercession of the Railroad Commissioners, similar experiments were tried on the Boston & Maine and the Old Colony roads, with results which have, year by year, been reported in detail.

These trains have never been looked upon with favor by the railroad corporations. By certain of them, also, the position of members of this Board in relation to the matter has always been misunderstood. A final attempt to make that position clear may not, therefore, now be out of place. With the law making the running of these trains obligatory, under certain conditions, upon railroad corporations, the Commissioners had nothing whatever to do. It was, however, a law—a law passed in opposition to their best judgment—and it was merely incumbent on them to secure for it a full and fair trial. Thanks to the reasonable spirit shown by certain gentlemen connected with the railroad corporations, it has had one. By the results of that trial it can now be judged. Of the three experiments tried, that on the Eastern Railroad resulted in a surprising success; that on the Boston & Maine in a reasonable success; while that on the Old Colony was a failure. The legitimate conclusion, therefore, is that the conditions necessary to the success of such trains exist on some of the Massachusetts roads and do not exist on others. No demand for them now exists, except in localities where there is a dense population of laboring people. This is found on the Saugus Branch of the Eastern road, and, in a less degree, on the line of the Boston & Maine road. The members of this Board have, however, never looked upon these trains as a charitable institution. They have seen no good reason why railroad corporations, under our laws and system of government, should be made to supply special accommodations, to their own detriment, for any class of citizens, whether rich or poor. The grounds upon which they have urged the establishment of these trains have been of a wholly different character. They have urged them more especially on the ground of the pecuniary interest the corporations had in furnishing them. They now believe that the results of the experiments which have been made afford satisfactory evidence that the view thus taken was sound. No one, least of all those long concerned in the management of suburban railroads, will dispute the proposition that a line running out of a great city, through a continuous village, is very advantageously placed. It has a local business on which it can depend. To build up these continuous villages along their lines has for years been a great object among railroad managers. In order to do this, they are glad to make favorable arrangements with land companies and to grant permanent low rates of fares. A service of cheap workingmen's trains is but an extension of this principle. A very striking illustration of how far it can be extended, with results most beneficial to the railroads, has recently been furnished in the immediate neighborhood of Boston. It is an illustration of which this Board has already made use in another connection. In 1869 a land company was organized at Wollaston, a station about six miles from Boston, on the Old Colony Railroad. In order to promote building at this place, and to increase their receipts at the station, which then amounted in all to but \$2,100 a year, the railroad company offered, not a cheap train to it, but a free pass during three years for one person dwelling in every house which might be erected there. Within two years, though one person from each house traveled free, the receipts at the station had risen three-fold, from \$2,100 to \$6,300. That was in 1871. Since then they have again more than doubled, and during the last year they amounted to \$13,600. This is the principle, carried one step further, upon which

the Commissioners have urged the running of workingmen's trains. It is useless to begin to run them as a weak experiment, to be soon abandoned. To induce settlement they must be an assured permanence. They should also, to insure success, be connected with cheap land companies. In view of the results already arrived at, the members of this Board can entertain no doubt that any corporation operating a railroad leading out of Boston, which establishes a workingmen's settlement on its line, on the cheap-train principle, would secure for itself, and that not remotely, a great financial success. As an inducement to people to make their homes there, the assurance would have to be given that a workingmen's train, at the lowest possible rate of fare, should always run from and to the place. From that train itself the corporation would neither expect nor seek to realize any profit. So much of carriage would be given at cost. Then, however, comes the other side of the question. Every village on the line of a railroad makes traffic for it in innumerable ways. Those who travel to and from their work at cost would have families. These families have to use the railroad for every purpose of life. In the case of the Wollaston settlement in 1871, when one person from every house traveled free, representing no less than \$4,700 a year at season-ticket rates which the corporation gave away—at that very time the other travel, which those holders of free passes brought with them increased the money receipts at the station by \$4,200—just doubled them. The statistics of our railroads show that every human being, man, woman, or child, living along their lines, pays to them in some form an annual average of \$17.60. A suburban settlement, therefore, built up by the assurance of a permanent workingmen's train, represents a great deal of business to the railroad besides that which is done at cost on that train. Indeed, the last is a very small item of the whole. It represents to a railroad corporation far less than the amount which every enterprising shopkeeper expends, as a matter of course, in advertising his goods.

These are the grounds upon which the Commissioners have always urged the running of these trains. That the conditions for making them immediately successful exist everywhere, no one for a moment supposes. They must, of course, be established with judgment, and run permanently. Even upon the Mattapan Branch of the Old Colony, however, unsuccessful as the experiment there tried has proved, the Commissioners are confident that, under slightly different circumstances, a wholly different result would in a reasonable time have been arrived at. As at Wollaston, the train should have been the adjunct of a settlement. One or several large tracts of land should have been brought into the market as sites for cheap homes for laboring people. Assured of permanent carriage at fixed hours from and to these homes at the lowest possible rates of fare, people would gradually have gone there to live. Continuous villages would have sprung up. It is, of course, no part of the business of railroad companies to lay out villages on speculation. This, however, the Old Colony did not do in the case of Wollaston. It merely put the additional inducement in the hands of the land company to advertise with. It made, also, a great deal by the operation. It is very difficult to see why a somewhat similar inducement put in the hands of a somewhat similar company at another point should not in time result equally well. In view of the experience of the Eastern and Boston & Maine roads, the members of this Board do not see how any one can doubt that in the vicinity of Boston there is, especially at the present time, a great need of just this sort of accommodation. There is a large and growing class which will seek to establish itself on that road which promises to supply it. Under these circumstances, and feeling, as they do, that in this matter the interests of the community and the corporations are identical, the Commissioners would very much regret being obliged to report the discontinuance of these trains on either of the lines upon which they are now running.

RAILROAD LAW.

The Illinois Tax on Capital Stock.

We take the following summary of the opinion of the Illinois Supreme Court in the case of the Chicago, Burlington & Quincy Company against Siders from the *Peoria Transcript*, having seen as yet no full copy of the decision:

"The case is one in which the railroad company applied for and obtained an injunction against Siders as collector of McDonough County, to prevent him from collecting taxes against the plaintiff upon an assessment made by the State Board of Equalization, as and for capital stock for the year 1875. Upon hearing, the injunction was dissolved and the bill dismissed, and from this decree the plaintiff appealed to the Supreme Court.

"Judge Schofield, in his opinion, says that many of the points involved in this case have already been passed upon, and cites several decisions. It is charged and admitted that in assessing railroad track and right of way of the plaintiff, the State Board did not take into consideration the improvements beneath the ties and iron, but excluded such improvements from their assessment, to be included under the designation of capital stock. The mode of assessing capital stock is said by the Court to be the same as in the other cases. The Court says: 'Since the value of the bridges, embankments, etc., forming the superstructure of the track is represented, as in everything else belonging to the corporation, in the value of its capital stock, and since appellant's road is treated like every other road in the State, in having such property excepted from assessment as tangible property, it is impossible to see how appellant is injured by this action of the State Board. It is not shown that the valuation of appellant's capital stock is larger than it would have been had the superstructure been assessed as tangible property and its value then deducted from the equalized value of its capital stock.' After discussing some apparently minor points regarding the processes of the State Board of Equalization, the opinion concludes as follows:

"Whether the valuation of railroad property is represented solely in the valuation of its tangible property and that of its capital stock, we cannot regard as *per se* evidence of an unjust and fraudulent discrimination. It results that we do not feel justified in holding appellant's assessment fraudulent and void, from the simple fact that a number of other corporations are returned as having nothing taxable beyond the assessed value of their tangible property. It is not our province to determine the wisdom of entire accuracy in this assessment. It is doubtless liable to grave objections on both these grounds. But this Court has repeatedly held that the collection of a tax will not be enjoined simply because of errors of judgment in the assessors. Nor is the fact that the assessment is not strictly and literally, in all things, according to the letter of the law, ground for equitable intervention. Equitable not legal relief is sought by the bill, and, to warrant the injunction against collection of the tax, it should appear clearly from allegations and proofs that the assessment works such an injury to appellant as a court of equity alone is competent to redress. Such a case, in our opinion, is not made out, and the decree must therefore be affirmed."

There are a number of similar cases before the Court, which will now probably be decided in the same manner.

* Fourth Annual Report (1873), p. 38.
+ Fourth Annual Report (1873), pp. 37-49; Fifth Annual Report (1874), pp. 22-27; Sixth Annual Report (1875), pp. 25-30; Seventh Annual Report (1876), pp. 52-60; Eighth Annual Report (1877), pp. 37-42.
‡ Third Annual Report (1872), pp. 90, 100.



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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

RATES AND COMBINATIONS.

Notwithstanding all the efforts that have been made, the special precautions taken last fall when no immediate danger of a break of rates was apprehended, the careful preparation of a plan to increase the dangers to any who should cut rates, the various steps taken toward perfecting that plan, the substantial agreement of those who were to execute the plan, and what appears even now to be a universal and strong desire to restore the now broken rates and maintain them hereafter—notwithstanding all this, east-bound rates continue broken, unsatisfactorily low, and, we fear we must say, with no present prospect of their restoration. Scarcely ever have so great efforts to secure harmony been made, never perhaps has there been so little difference of opinion as to what ought to be done, and yet the object aimed at seems not likely to be secured, at least not in time to secure its advantages for the winter's business, which is unusually large, and apparently could have been made to return very satisfactory profits.

And yet there seems to have been no serious cause of a quarrel. No complaint was made, we believe, until after the cutting had actually begun, that any one line was getting an insufferably large share of the traffic, or that the established rates were too high to permit a free movement of business. To be sure, cutting rates would not have been the way to remedy such evils, but it is a result which we call natural because we have learned to expect it under such circumstances. But this winter, most of the time, the traffic was exceptionally large, and the roads at times have had difficulty in obtaining cars to accommodate it. But this has not availed to keep up rates, which have tended downward rather than upward since the trouble began, and are now likely to demoralize business indefinitely through the contracts that have been made to carry at reduced rates for months to come.

And yet when we come to look for the occasion of this demoralization, which is likely to result in the loss of several millions of dollars to the carriers, and probably the infliction of most unjust discriminations of rates among shippers before business is settled again, it cannot be found. In this case unusual efforts have been made to trace the irregularities to their origin, and after all it appears that mere suspicion was at the bottom of it all. One line believed that another line was cutting rates to divert business, and immediately the party which suspected began cutting by wholesale. Up to this time it remains doubtful who took the first step, or, indeed, whether there has not been some cutting in a mild way all the time by all the companies.

This is very discouraging, for if during a season of extraordinary traffic it is found so difficult to maintain remunerative rates on east-bound traffic, it is easy to infer that hereafter, as business is now conducted, demoralized rates will become the rule rather than the exception. Now this is a dismal prospect. The east-bound business is the great business, probably three or four times as great in bulk as the west-bound. And the through rates apply on a greater proportion of this traffic than of west-bound. The shipments of merchandise to the West are made chiefly to a few great distributing centres, such as Chicago, St. Louis, Cincinnati, etc.; but the shipments of produce from the West are made to a much greater extent directly from the interior stations through to the seaboard or the station of the Eastern consumer. And the tendency is toward an extension in the Northwest of the routes over which through rates are made. That is, the number of Western lines which are able to make their own rates for their lines, which rates are added to the rates made over the trunk lines and do not necessarily rise and fall with them, is decreasing. If the through rates which suffer by a railroad war applied only to the lines east of Chicago or St. Louis, the number of sufferers would be comparatively small. Most of the Western roads could secure full rates on their traffic, and would gain rather than lose by very low rates from their eastern termini to the seaboard. But now rates are made through between the seaboard and Mississippi River points below Rock Island and the Missouri River points below Omaha, and a reduction which takes a quarter or half from the earnings of through traffic over the New York Central and the Lake Shore, also takes a similar proportion from the Wabash, the Indianapolis & St. Louis, the Missouri Pacific, the St. Louis, Kansas City & Northern, the Hannibal & St. Joseph, and from a part of the through traffic of the Chicago & Alton, the Chicago, Rock Island & Pacific, the Chicago, Burlington & Quincy, and many other Western roads, which formerly were able to make their own through rates on most of their through traffic, however demoralized might be the rates east of them. It is an advantage of two of the great Northwestern systems—the Chicago & Northwestern and the Chicago, Milwaukee & St. Paul—that they are as yet little affected by these fluctuations of the through rates between the seaboard and the Northwest.

Until a comparatively recent date, east-bound rates have generally been well maintained. They were not always regular; it is true, and "cutting rates" was by no means unknown, but then the cut rates were usually remunerative rates. The main trouble then was with the west-bound traffic, for which, in the nature of things, there must always be a great excess in the supply of over the demand for transportation facilities, whether the lines be few or many. The efforts to get traffic to fill the cars going west empty were constantly causing railroad wars and great reductions in the west-bound rates. The Western companies could always complain with at least the appearance of justice that all the profits on through traffic were from the business which they secured and the rates which they made and all the losses from the business and rates controlled by their eastern connections. Now this seems likely not only to be changed but reversed. The east-bound business is more subject to demoralization for the same reason that has extended the application of through rates on Western roads. Rates which were formerly established by the agreement of comparatively few Western companies must now be subject to the dictation of a great number, and the difficulty of agreement and the danger of irregularity are in proportion to the number of competitors, or in some greater proportion.

The difficulty with regard to west-bound rates has been recently overcome by the establishment of a combination which for most of the business fixes each line's share of the traffic and so prevents diversion from one to another by reductions of rates or any other art. But no such combination—that is, no combination working by similar methods—has been attempted for the east-bound traffic, and to establish one evidently would be much more difficult where the

consent of so great a number of roads would have to be obtained and where the interests are so various and complicated, and the business of some of the lines is not fully developed.

So the relations between east-bound and west-bound traffic have changed materially. The causes which tend to force down west-bound rates continue to exist, as they always must, but they are, for the present at least, successfully neutralized by the combination of the few lines which make the rates on that traffic. The causes which formerly tended to maintain east-bound rates, however, have been modified. They exist as before so far as the trunk lines and their immediate connections are concerned, that is, the rolling stock of such roads as the Michigan Central and the Lake Shore & Michigan Southern is as fully employed as ever in east-bound business, and their trains eastward are usually full; but the business is more divided among other roads which make the rates, the lines into Chicago and St. Louis no longer controlling the east-bound rates to the same extent as formerly. There is more competition than formerly for the east-bound traffic among the roads that make the rates, and greater difficulty in making an effective combination among them. Combinations in this business, however, never have had much effect, the agreements being carried out (when they were carried out) more by reason of the circumstances of the traffic than of the strength of the combination.

But though the formation of an effective combination is made more difficult by the number of the competitors and the complexity of the interests, it is somewhat facilitated by the increasing conviction that without a combination the through traffic is in danger of being permanently profitless, a conviction which recent experience serves to strengthen; that is, with the increased difficulty of making a combination has come an increased desire to make one.

The proposed action of the trunk lines is the first indication of resistance to the extension of the "pro-rating" principle. They now propose, if the Western roads do not succeed in maintaining agreed rates, substantially to exact arbitrary rates over their own lines. That is, the Western roads may force down rates, by cutting, to the basis of 25 cents or less per hundred from Chicago to New York, if they please; but if so the trunk lines will refuse to bear any proportion of the reduction, but will exact payment over their lines from Parkersburg, Wheeling, Pittsburgh, Salamanca, Buffalo and Toronto to the sea-board at the regular rate, or if no such rate has been agreed upon by the Western companies, at such remunerative rate as they themselves may establish. As the trunk lines form nearly one half of the distance between New York and Chicago, this would have a great effect. By the regular rate this winter the New York Central would receive about 18½¢ of the 40 cents charged for carrying a hundred pounds of fourth-class freight from Chicago to New York; with this rate cut down to 25 cents, as it has been recently, it would, according to the prevailing practice, receive but 11½¢, the lines between Buffalo and Chicago taking the other 13½¢. But by the policy proposed the New York Central would continue to exact the 18½¢, however much the regular rate might be cut. Then the western road, which makes the rates and is responsible for cutting them, would receive but 6½¢ instead of 18½¢ as its share of the 25 cent rate. That is, the roads west of the trunk lines would suffer the whole loss by the cut.

This is a reversal of all previous practice, and it remains to be seen whether it can be carried out. If it can be it will be greatly to the advantage of the trunk lines, and probably without corresponding loss to the western lines, for if they know that the whole amount of the reduction must be borne by themselves, they will probably limit it correspondingly; instead of cutting from 40 to 25 cents, as they have done this winter, they would probably have gone no lower than say 32 cents.

The advantage of such a policy, however, would be very different for different trunk lines, being greatest, of course, for those which own or lease no western connections, namely, the New York Central and the Erie. The Pennsylvania receives nearly all its Chicago traffic and a very large share of its other Western traffic from its own roads—from lines whose losses and profits are the profits and losses of the Pennsylvania Railroad Company. It really makes no difference to that company whether the rate from Chicago to New York is distributed in proportion to mileage between the Pittsburgh, Fort Wayne & Chicago and the Pennsylvania railroad companies, or whether nine-tenths of it is assigned to the Pennsylvania and only one-tenth to the Fort Wayne company. It is different with the contributions of traffic which it receives from independent roads, but probably its chief advantage would come from the probable limitation of the

amount of the reduction, if the whole of it had to be borne by the lines west of Pittsburgh and Buffalo. It is different with the New York Central and the Erie. Neither of these is affected by the profitability or unprofitability of its western connections, except by the guarantee of a small amount of interest on Canada Southern bonds by the New York Central.

It may be said that if the trunk lines refuse unlimited discretion to their western connections in making east-bound rates, the Western lines may do the same with regard to west-bound rates. That is true; but, in the first place, the west-bound traffic is less important, and, again, there seems at present to be little danger that the trunk lines will desire to cut them. The combination for maintaining them is working very satisfactorily, and there seems no present prospect that the Western roads will have occasion to complain that the rates are unnecessarily reduced.

If this policy is pursued, it will have the effect of securing to the trunk lines, which have the heaviest traffic and usually are able to carry it at the least expense, better rates on the same traffic than their western connections, some of which have a very thin traffic and cannot be worked nearly as cheaply as the trunk lines. The latter then will be able to approximate the uniformity and regularity of rates which is so much to be desired by the carriers and the community alike, though of course not by the latter at the expense of reasonableness. The establishment of the unreasonably high rates on through traffic, however, is almost impossible. Circumstances wholly beyond the power of any railroad or any combination of railroads to control prevent the collection of high through rates of transportation over the trunk lines and most other railroads in America. It is high rates on local traffic, that are apt to be the corollary of unduly low rates on through traffic, that the public sometimes have to complain of, and these are never likely to be equitably adjusted until some means have been contrived by which the through traffic can be made to contribute its share toward paying interest on the capital invested in railroads.

THE ECONOMY OF FUEL.

The London *Engineer* recently contained an editorial in which some comparisons were made between American and English locomotives and among others of the relative amount of fuel which each burns. It was stated that in 1875 the "goods" engines on the United Railroads of New Jersey burned nearly twice as much coal "as suffices the North British Railway Company for working the exceptionally heavy road between Edinburgh and Carlisle."

A correspondent of the same paper, Mr. J. E. Clanchy, who signs himself "late Engineer First Section San Paulo Rio de Janeiro Narrow-Gauge Railway," in a letter on the same subject published in the issue of Jan. 25, says: "On the Itu & Jundiahy metre-gauge line a Baldwin engine and one from the Avonside Engine Works have worked alternately under the same conditions for some time, and naturally excited much interest as to their relative powers; yet in the matter of fuel alone there has been a saving of 30 per cent. in the English engine."

Now if these statements are true, or rather if English engines can be made to do the same work with 30 per cent. less fuel than American engines consume, it is a matter of the most vital importance to railroad managers and railroad owners in this country. It will, however, be difficult, we fear, to induce them to give the subject serious consideration, owing to the fact that they are so accustomed to hear extravagant estimates of what can be accomplished by inventors and inventions, that such statements generally have very little influence on their minds. But in this case the statements are not made by inventors, nor is there any invention whose merits are being extolled. National prejudice might have some influence on the conclusions reached, and have led to some partiality, but it is to be feared that railroad managers who snap their fingers at such statements, if subjected to a cross-examination, would be compelled to admit that they have not the necessary information concerning the consumption of fuel, on their own lines, to be able to make an intelligent comparison. This being the case, the question comes up whether it is wise to make a general denial without any evidence to sustain such an opinion. Whether the statements made in the *Engineer* are true or not, we will not undertake to show at present, but the point to which attention is directed is the fact that very many railroad managers do not know whether their locomotives are burning 30 per cent. more coal than they should or not. The cost of fuel is from 6 to 10 per cent. of the total operating expenses; so that a saving of 30 per cent. in that item would, in round numbers, amount to from two to three per cent. of the whole expenses.

Such figures as these often make very little impression, since a railroad manager quite naturally says this is not worth saving, because in doing so an equal amount must be expended for the improvements on the engines, for the cost of keeping account of the fuel, and for the maintenance of the requisite facilities for handling it. Thus it would be a very easy matter, on a small road, the operating expenses of which amounted to \$100,000 per year, to expend two or three thousand dollars, the amount of the assumed saving, for improvements in locomotives, wages to fuel agents, maintenance of fuel stations, etc. The same thing is true of roads which expend annually a half million, or one or two millions for operating expenses, for the saving in such cases of ten or fifteen, twenty or thirty, forty or sixty thousand dollars could easily be squandered in the effort to save it, with the disadvantage, too, that in the latter case more clerical force and more complication of accounts would result from such efforts at economy; still notwithstanding the fact that most practical and experienced managers are inclined to this view, yet we are disposed to think that if the right kind of effort were made by the right kind of men, the risk of spending more than is saved could be eliminated, and that it could be shown in advance whether certain measures would pay or not; for after all that is the test which must be applied to any improvements which are made.

Attention has been called in these pages a number of times to the importance of keeping account of the fuel consumed by all the engines and of the work done by each. This is done on some roads, but still it is far from being general or even common. It is objected by many that to do this it is necessary not only to increase the clerical force, but to add materially to the force required to handle the fuel, and that to be able to measure or weigh it a considerable outlay is required to provide the necessary means for doing this. Besides, to determine the amount of fuel consumed without knowing how much work is done makes the record almost useless for purposes of comparison. To keep a record of the latter there is only one effectual way, which is to keep an account of the car mileage, the expense of which is apt to alarm those high in authority. Now admitting that the objections to incurring these expenses are valid, although it is not believed that they are, it is still hardly wise to turn a deaf ear to such statements as those made by the editor and the correspondent of the *Engineer*. If English engineers have the secret of making locomotives which burn 30 per cent. less fuel than those made here, locomotive-builders and master mechanics should not rest until the secret is revealed, and until our locomotives are made to do as well as those built abroad. We are not inclined to admit unreservedly that the difference in the consumption of fuel in English and American engines indicated in the *Engineer* really exists, without some more exact data obtained under conditions of working and supervision alike for both classes of engines, but still the statements referred to are sufficiently suggestive to indicate that it would be judicious to test the merits of some of the features in which English locomotive construction and working differs most from ours, even if this were not desirable without such suggestions. Before doing this, however, it might be well to point out that the smallest consumption of fuel say per car per mile may not in the end be the most economical. Thus in some experiments, a report of which will be found on page 450 of the "Catechism of the Locomotive," the consumption of coal with a train of 31 cars was 1.13 lbs. per car per mile, whereas with 41 cars it was 1.21 lbs., or a little over 7 per cent. more in the one case than in the other; but it must be kept in mind that the wages of the engineer and fireman alone cost as much as the fuel, and that in the one case they do over 33½ per cent. more work than in the other, so that the cost of hauling the cars in the heavy train, although the consumption of fuel was 7 per cent. greater, really resulted in a saving of over 26 per cent. on the cost of fuel, owing to the greater amount of work done by the locomotive runner and fireman. If the wages of other train hands and other train expenses were taken into account, it would make the amount saved still greater. For this reason the tendency in American practice has, of late years especially, been to construct locomotives so as to haul the largest possible trains, without much regard to the economy of fuel, because by doing this more money could be saved in the train expenses (chiefly the wages of the men) than in the cost of fuel. Now to haul a heavy train it is necessary to burn a large amount of fuel, and to do this a large fire-box and grate are needed. Therefore it will be found that generally in American practice, the fire-boxes of locomotives are made longer than those of English engines. Their weight being in proportion to their length, the other portions of the

boiler must be reduced in size, so that usually the grates here are larger and the heating surface smaller than in locomotives built on the other side of the Atlantic, thus reversing the axiom of Mr. D. K. Clark that "practically, there can never be too much heating surface, as regards economical evaporation, but there may be too little; and that, on the contrary, there may be too much grate-area for economical evaporation, but there cannot be too little, so long as the required rate of combustion per square foot does not exceed the limits imposed by physical conditions."

English engineers, however, avail themselves of one great advantage in the design of their locomotives that has been almost entirely disregarded here. The frames of American locomotives are usually from three to four inches wide, and extend the whole length of the machine. Consequently the fire-box must be confined in width to the available space between the frames, which on a 4 ft. 8½ in. gauge seldom exceeds 43 or 44 inches. The outside of the fire-box is therefore only about 35½ inches wide, whereas, in English engines, whose plate frames are from ¾ to 1¼ inches thick, the fire-boxes are from 42 to 44 inches wide inside, and therefore the grates have about 25 per cent. more area than those of American engines of the same length. It must also be kept in mind that the weight of a wide fire-box is very little if at all greater than that of the narrow one, because the side-plates of the latter must be contracted in order to bring the fire-box within the limits of the space between the frames. Therefore the other portion of the boiler may be made heavier, and consequently have more heating surface.

The wide fire-box has also another advantage, from the fact that it is more nearly square, and therefore the heat evolved during the process of combustion is not conducted away so rapidly, and therefore higher temperatures and a more perfect combustion are attainable. If a fire-box is long and narrow, the heat is conducted away from the fire very rapidly, and it is conceivable that it might be made so narrow that the fire would not burn at all, especially with anthracite coal. The object to be aimed at in a locomotive is to retain the heat in the fire during the process of combustion, and then expose it to as much surface as possible afterwards, so as to transmit it to the water. The first end, it is thought, is accomplished better by a wide fire-box than with a narrow one, and the last by a large amount of heating surface. In both of these features the English engine is superior to the American type. Nevertheless, these advantages are attained by a form of construction which is in many ways inconvenient, and which affords less facilities for making repairs than the American plan does. With the frames and fire-box constructed on the English plan the springs must be placed below the frames, and there is not sufficient room for the equalizing beams on the sides of the fire-box. Nevertheless, the advantages to be gained by this method of construction are sufficiently great to merit the attention of American master mechanics. While it would be great folly to close our eyes to any advantages which the English designs have over ours, yet in making comparisons like those in *The Engineer*, the fuel consumption should not be taken into account alone. As has been pointed out a good many times in these pages, the whole train expenses make up the cost of transporting freight and passengers, and the engine which will haul cars under any given conditions at the least total cost is the most economic engine for that special purpose, even though its consumption of fuel is greater than that of some other engine which is not capable of hauling so heavy a train. At the same time in attempting to accomplish the one end we should not lose sight of the other.

This subject is however larger than the amount of space which can now be devoted to it, and therefore we will be obliged to return to it hereafter.

Winter Grain Receipts at Atlantic Ports.

The distribution of the winter grain receipts since the close of navigation among the several Atlantic ports for the two months of December and January is as follows, for the past two seasons:

	1877-78.		1876-77.	
	Bushels.	P.c. of Total.	Bushels.	P.c. of Total.
New York.....	11,413,141	40.0	5,724,266	34.4
Boston.....	2,182,413	7.6	1,575,937	9.5
Portland.....	442,446	1.5	301,242	1.8
Montreal.....	40,855	0.2	41,615	0.2
Philadelphia.....	5,731,235	20.1	3,437,330	20.6
Baltimore.....	6,265,590	21.7	4,867,100	29.3
New Orleans.....	2,540,392	8.9	804,936	4.2
Total.....	28,555,982	100.0	16,641,996	100.0

Thus in the proportion received New York has made a considerable gain, and Baltimore a still larger loss; New Orleans has more than doubled its proportion and now stands above Boston, which has lost something, and the other changes have been slight, Philadelphia nearly holding its own.

The total winter business for the two months has

been 70 per cent. greater this year than last, and there is no place except Montreal (whose business is wholly insignificant in winter) which does not show some increase in receipts.

The change in favor of New York has been made wholly in the month of January. In December last, it was a little behind its position the previous year. Baltimore had 25.7 per cent. of the December receipts this winter, but only 18.6 per cent. of the January receipts.

Comparing New York with Philadelphia and Baltimore, which are its only real rivals for the export grain trade, we find the proportions for the two winters to have been:

	1877-78.	1876-77.
New York	40.0	34.4
Philadelphia and Baltimore	42.8	49.9
Three ports	82.8	84.3

There is this to be said of the movement last year, that circumstances favored the lines to Baltimore and Philadelphia, for in January the chief carriers to New York were badly blockaded most of the month, while the obstruction had much less effect on the more southerly lines which lead to Baltimore and Philadelphia. Thus they had an advantage last winter which they have not had this.

The three ports together, it will be seen, received a trifle less than five-sixths of the total this year and a trifle more last year.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads, as follows:

Olean, Bradford & Warren.—Extended from Tarport, Pa., east by north $4\frac{1}{2}$ miles to a connection with the New York section of the road at the State line. It is of 3-ft. gauge.

Foxburg, St. Petersburg & Clarion.—Extended from Turkey City, Pa., to Jefferson City, 5 miles. It is of 3-ft. gauge.

Little River Valley & Arkansas.—Completed from New Madrid, Mo., west by south to Malden, 27 miles. It is of 3 ft. gauge.

Pittsburgh, Wheeling & Kentucky.—Extended 1 mile into the city of Wheeling, W. Va.

Denison & Southeastern.—Extended from Choctaw River, Tex., to Belleville, 7 miles.

Ocmulgee & Horse Creek.—Completed from the Ocmulgee River in Telfair County, Ga., 7 miles.

This is a total of $51\frac{1}{2}$ miles of new railroad.

THE PALACE STOCK CAR COMPANY, or a corporation spoken of by that name, which is said to have bought up all the patents (62 in number) for stock cars which provide for feeding and watering the animals *en route*, has one of the most beautiful plans for making a fortune by Act of Congress, that the heart of man ever conceived. It has caused a bill to be introduced into Congress, providing that unless cattle are carried in its "palace stock cars," they shall be unloaded and fed every 24 hours—a considerably shorter period than is now required and practiced, and for which all the arrangements of the railroads—the costly stock-yards, etc.—are designed. This was an ingenious plan, for it made an appeal to humanity, which is apt to be listened to without taking pains to ascertain whether it would be really humane to grant what is asked in the name of humanity; and cattle-shippers are not likely to be credited with any tenderness for their dumb property, while railroad corporations, having no souls, of course cannot have hearts. If the value of cattle for meat was improved by a course of starving and exhaustion, there might be some necessity of interference by the government; but it has always been held out by the owners of "palace stock cars" that many times the cost of using them is saved by the better condition and heavier weight of the animals on arriving at market. And there is no doubt that hunger and thirst and prolonged weariness does reduce the weight of animals and injure the quality of their meat, and (which is a fact that the hardest-hearted cattle-dealers can feel to the very bottoms of their pockets) reduces their market price. For this reason the men who own the cattle which they are transporting are interested more than any one else can possibly be in their humane treatment. And yet, strange to say, they could not be induced to adopt the "palace stock cars," though for years they have been urged to do so. Indeed, they assert that to use them would be inhuman; that the animals suffer more from confinement and exhaustion in a run of 80 or 100 hours in a "palace" stock car, where they are offered food and drink, than in a run of 30 or 40 hours in an ordinary car, with rest and refreshment on the solid earth thereafter; that food and drink do the cattle little good in their excited condition when running; and that as the business is actually conducted the suffering of the animals is not great, as the very small number of deaths *en route* indicates.

A large number of prominent railroad men have been in Washington to appear before the House Committee (on Agriculture, we believe) in opposition to this bill, and they are convinced that this Committee will report against it.

THE WESTERN RAILROAD MEETING, whose proceedings, so far as they have been made public, we report elsewhere, was in many respects disappointing, but after all not wholly discouraging. It is true that the object directly aimed at was not attained. Rates were not restored, and propositions to restore them to the old regular rate or two others, one-

eight and one-quarter lower, respectively, were voted down. It was made to appear that there are a good many contracts outstanding to carry at greatly reduced rates for one, two, three and more months to come. But on the other hand there was manifested a universal anxiety to restore rates. And apparently the sole obstacle to the restoration of rates was the refusal of a single company to permit the distribution of the business which has been secured ahead by time contracts. Though this is enough to prevent the restoration of rates now, and perhaps for some time to come, it seems to indicate that the differences are temporary, and that, really, the managers are quite generally disposed to take radical steps to secure the maintenance of uniform and regular rates. It must be remembered that in cases like these the majority does not rule; it is nearer the truth to say that the minority rules, for the dissent of one can prevent the action desired by all the rest. In this case the companies whose refusal to divide the business under their time contracts already made prevented the immediate restoration are understood not to oppose, on general principles, a combination for the division of traffic. Considering the complexity of the east-bound business and the number of lines which receive it, it is remarkable rather that so many than that so few committed themselves openly in favor of an apportionment of the business.

THE WINTER GRAIN MOVEMENT for five years for the months of December and January has been:

Receipts of the eight leading Northwestern markets:

1877-78.	1876-77.	1875-76.	1874-75.	1873-74.
23,365,040	20,368,292	20,913,672	13,984,498	26,325,261

Shipments of the same Northwestern markets:

1877-78.	1876-77.	1875-76.	1874-75.	1873-74.
13,536,554	8,990,745	9,295,360	6,763,860	12,010,012

Receipts of the seven Atlantic grain ports:

1877-78.	1876-77.	1875-76.	1874-75.	1873-74.
28,555,582	16,422,984	15,838,748	13,572,860	17,829,573

Compared with last year there is an increase of 15 per cent. in Northwestern receipts, of 51 per cent. in Northwestern shipments, and of 74 per cent. in receipts at the Atlantic. Compared with the winter of 1873-74, until this year the winter with heaviest grain movement, there is this winter a decrease for the two months of $11\frac{1}{2}$ per cent. in Northwestern receipts, an increase of $12\frac{1}{4}$ per cent. in Northwestern receipts, and an increase of 60 per cent. in receipts at Atlantic ports. There has never been any movement of grain to the seaboard in the winter in any degree comparable with that of this winter.

A GENERAL PIPE-LINE BILL has been introduced in the New York Legislature, somewhat similar in its provisions to the one recently defeated in the Pennsylvania Legislature, that is, it provides for the organization under a general law of corporations to construct pipe lines for the conveyance of petroleum anywhere in the State, precisely as railroad companies may be organized in New York and most of the other States under general laws, without special charters.

The tremendous opposition to the free pipe bill in Pennsylvania indicates that the railroads are convinced that such a line would be a dangerous competitor for the oil transportation to the seaboard. Doubtless the loss of the oil business would be a material injury to the trunk lines, but if there is any cheaper way of handling this traffic, the railroads must not expect to keep it. Unfriendly legislation may prevent their introduction for a time, but if the oil can really be carried to the seaboard considerably cheaper by pipe lines than by rail, the pipe lines are sure to come, and all the exertions of the trunk lines, and the Standard Oil Company in the bargain, will not be able to do more than to delay their coming for a little. And when the law finally does make the way clear for them, we venture to suggest that a railroad company could manage a pipe line very handily, and that the most convenient place for one is along the right of way.

THE COTTON MOVEMENT, which, as we have noted, was quite light in the fall, and compared very unfavorably with the business of 1876, largely owing to the lateness of the crop of 1877 and the earliness of that of 1876, has been extraordinarily heavy of late, so that the total receipts at the seaboard for the crop year are now about as great as last year. December and January receipts were the largest ever reported for those months. The exports have been $8\frac{1}{2}$ per cent. less than last year. The amount that has come forward so far is equal to more than 80 per cent. of last year's large crop, and as an unusual proportion came forward early last year, it seems probable that the crop of 1877 will turn out to be about as large as that of 1876—that is, about as large as any ever produced.

THE SOUTHWESTERN RATE ASSOCIATION is threatened with dissolution or a very great limitation of its usefulness by the withdrawal of the two St. Louis railroads. Probably the most difficult part of the work of this Association has been the adjustment of the differences in the rates to Chicago and to St. Louis from Missouri River points, so that the withdrawal of the St. Louis roads will leave it with the better part of its occupation gone. The Association has been working, for some months past, under an agreement to divide, in certain definite proportions, the gross earnings from the total traffic covered by the agreement, the substantial effect of which was expected to be a corresponding division of the traffic, as frequent reports were made, and a line was not likely to solicit shipments for which it could receive no payment whatever. It is said that the traffic offered, however, was not lately in proportion to the division agreed upon, and that may be the reason why the St. Louis roads propose to withdraw. They have not, however, asked for any revision of the distribution, nor, indeed,

given any reason for their withdrawal. By the terms of the contract the roads have to give forty days' notice of their withdrawal, and this will give time for negotiations for the renewal of the agreement, or of some revised agreement; and there are hopes that there will be such a renewal on a more satisfactory plan than before. The business is one on which it is very difficult to maintain rates. There are many competitors for it, and the competition of the two great Northwestern markets, Chicago and St. Louis, affects it, as well as that of the railroad companies.

THE BOSTON AGREEMENT is said to be working satisfactorily, and it is noticeable that the complaints of merchants which were so common and bitter when the Boston rates were low have ceased since they were raised. When the subject was left to Mr. Fink's arbitration, it was understood that the division, whatever the proportion might be, should be effected by fixing a difference between the Grand Trunk's and the other lines' rates, such difference to be adjusted from time to time until it should effect the desired result. To begin with, a difference of 10 per cent. was made, pending the arbitration, reports of all business being made to Mr. Fink for Boston business just as for New York business. That is, with the rates then prevailing the short line rates and the Grand Trunk rates from Boston to Chicago were:

	1.	2.	3.	4.
Short lines	1.00	0.80	0.60	0.45
Grand Trunk	0.90	0.72	0.54	0.41

This is said to have worked very well and brought the Grand Trunk a not very large proportion of the traffic, whether more or less than the proportion to be allowed it of course cannot be known until the arbitrator has made his decision.

WEST-BOUND RATES were reduced Feb. 14. The changes in the rates from New York to Chicago, which are the basis of all the others, are as follows:

	1.	2.	3.	4.
New rates	\$0.75	\$0.60	\$0.50	\$0.40
Old rates	1.00	0.80	0.60	0.45
Reduction	0.25	0.20	0.10	0.05
Per cent.	25	25	16 $\frac{2}{3}$	11

Thus the differences between the classes have been materially reduced. The rates now are about 1.65 cents per ton per mile on first-class and 0.88 cent on fourth-class freight. Boston rates are the same as New York rates; Philadelphia rates are six cents less on first and second class and two cents less on third and fourth-class freights, and Baltimore rates eight cents less on the two higher and three cents less on the lower classes.

The Chicago Conference on East-bound Rates.

In accordance with a resolution of the trunk lines conference in New York last week, a meeting of the Executive Committee of the Western roads, of representatives of the Western railroads, with the Trunk Line Commissioner and the Western Commissioner, was held at the Grand Pacific Hotel, Chicago, beginning Wednesday, Feb. 6.

There were present at this meeting: Pennsylvania Company and Pittsburgh, Cincinnati & St. Louis Railway—J. N. McCullough, Vice-President; Wm. Stewart, General Freight Agent.

Grand Trunk—L. J. Seagrants, Traffic Manager.

Chicago & Alton—J. C. McMullin, General Superintendent; Wm. Smith, General Freight Agent.

Great Western of Canada—Frederick Broughton, General Manager; Geo. B. Spriggs, General Freight Agent.

Canada Southern—James Tillinghast, President; W. K. Muir, General Manager; Wm. H. Perry, General Freight Agent.

Ohio & Mississippi—Wm. Duncan, General Freight Agent.

Indianapolis, Cincinnati & Lafayette—M. E. Ingalls, Receiver.

Cincinnati, Hamilton & Dayton—A. H. McLeod, General Freight Agent.

Wabash—A. L. Hopkins, General Manager; J. M. Osborn, General Freight Agent.

Toledo, Peoria & Warsaw—A. L. Hopkins, Receiver; W. S. Speirs, General Freight Agent.

Louisville & Nashville—M. H. Smith, General Freight Agent.

Chicago, Milwaukee & St. Paul—S. S. Merrill, General Manager; W. G. Swan, General Freight Agent.

Chicago & Northwestern—W. S. Mellen, Assistant General Freight Agent.

Cincinnati, Lafayette & Chicago—J. H. Stewart, General Manager.

Lake Shore & Michigan Southern—John Newell, General Manager.

Vandalia Line—John E. Simpson, General Manager.

Baltimore & Ohio—M. L. Doherty, General Freight Agent.

Michigan Central—H. B. Ledyard, General Manager; J. A. Grier, General Freight Agent.

Chicago & Lake Huron—Charles B. Peck, Receiver.

Chicago & Northeastern.

Indianapolis, Peru & Chicago—V. T. Malott, General Manager.

Chicago & Eastern Illinois—Robert Forsythe, General Freight Agent.

Peoria, Pekin & Jacksonville—John Allen, President; H. O. Canfield, General Freight Agent.

Indianapolis, Bloomington & Western—Geo. B. Wright, Receiver.

Illinois Central—Horace Tucker, General Freight Agent.

Lafayette, Muncie & Bloomington—J. W. Bromley, General Freight Agent.

Detroit & Milwaukee—A. White, General Freight Agent.

Flint & Pere Marquette—Henry C. Potter, General Manager.

Chesapeake & Ohio—W. E. Ludlow, Western Freight Agent.

Trunk Lines Commissioner—Albert Fink.

Western Commissioner—Nathan Guilford.

Mr. McCullough, of the Pennsylvania Company, was Chairman.

Mr. Fink presented the action of the trunk lines meeting at the Brevoort House, New York, Jan. 30, with regard to the restoration of east-bound rates, including their resolution, should rates not be restored, to give notice that after a given time they would insist upon their proportion of the regular rate, and would refuse to be bound by time contracts at reduced rates.

Mr. Seagrants stated that his company, the Grand Trunk,

would co-operate with the trunk lines in carrying out this policy.

The meeting then passed unanimously a resolution accepting and approving this action of the trunk lines.

It was then resolved that the Executive Committee of the Western roads, the two commissioners, with representatives of the Western roads to be appointed by the Chairman, be directed to draw up and report a plan for restoring rates.

The Grand Trunk, the Great Western, the Flint & Pere Marquette, the Detroit & Milwaukee, the Indianapolis, Cincinnati & Lafayette, the Cincinnati, Hamilton & Dayton, the Chicago & Northwestern, and the Chicago, Milwaukee & St. Paul were appointed to co-operate with the Executive Committee and the Commissioners in drawing up this plan, and the meeting then adjourned to await this committee's action.

It is reported that in this committee a proposition to terminate absolutely all contracts for east-bound freight within a few days was lost; also one to report all such contracts to the two Commissioners with instructions to them to apportion them as might seem to them most equitable; and also one, by a very large majority against it, to name rates immediately for all future contracts, and simply to report existing contracts to the trunk lines, that the latter might know which to carry out.

The committee then failing to agree upon any plan resolved that all the time contracts in existence be reported to Commissioners Fink and Guilford, with instructions to them to advise a policy to secure the restoration and future maintenance of rates.

The Commissioners made their report to the meeting Thursday morning, stating that the contracts had been reported to them by the several companies, and that it appeared that they covered a considerable quantity of freight for periods of various extent, some expiring in February, some in March, some lasting till May, some till July, and a few, though chiefly of a local character, being made for a whole year. Some of the contracts, however, could be abrogated, and some were for definite amounts, which might soon be forwarded. They recommended that all these contracts be pooled, and the business divided among the several lines as nearly as possible in proportion to the competitive business of each. They further recommended that the east-bound business of the important competing points be divided in the future, as the New York business now is, to secure the maintenance of rates in the future.

The first proposition, to pool the time contracts, was submitted to a vote, which was the most important action of the meeting.

Nineteen of the 21 companies represented voted in favor of this proposition.

The Lake Shore & Michigan Southern voted against it.

The Canada Southern declined voting. Mr. Newell, representing the Lake Shore road, explained its action by saying that he did not believe the policy proposed to be equitable or practicable.

Unanimous action being necessary, the recommendation was lost.

A substitute recommending that a pool of east-bound business be made, and that the meeting declare itself in favor of such an arrangement, received a majority of votes, and some of those voting against it stated that they only did so as it tended to postpone action on the contracts, which seemed to them to require immediate attention.

The second recommendation of the Commissioners, which also proposed an equal division of the east-bound traffic, received 15 of the 21 votes cast.

The following formal notices to all the western connections of the trunk lines were then read:

"GRAND PACIFIC HOTEL, CHICAGO, Feb. 8, 1878.

"Notice is hereby given to the Western connections of the trunk lines that, from this day on, the trunk lines will be no party to any time contract, or contracts, for any given quantity of freight made by any of the Western connections, their agents, or any of the line agents. And, further, that the trunk lines will become no party to any cut rates below the rates that may be established hereafter, from time to time, by the committee of the Western connections. And, in case that such committee fails to establish a rate, the trunk lines reserve the right to establish such rates, from time to time, as they may see fit over their own roads, and to enforce them on all their connections. ALBERT FINK, Commissioner Trunk Lines."

"CHICAGO, Feb. 8, 1878.

"The Grand Trunk Railway Company hereby gives notice that they will act in concert with the trunk lines in carrying out this notice, and enforce upon their connections the rates equivalent to those established by the trunk lines under the above notice, as may be agreed upon from time to time. L. J. SEABEANT, General Traffic Manager, Grand Trunk."

On the afternoon of Thursday successive propositions to restore the fourth-class rate to the basis of 40 cents, 35 cents and 30 cents from Chicago to New York were lost.

Then a resolution was passed, unanimously requesting Commissioners Fink and Guilford to report the proceedings of the meeting to the trunk-line presidents for further instructions, to adjourn to the call of the chairman, and to agree meanwhile to make no more time contracts.

Last Monday a meeting of the trunk-line presidents was held in New York to hear Mr. Fink's report and take action, but the unavoidable absence of Mr. Garrett prevented the taking of any definite action.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Housatonic, annual meeting, at the office in Bridgeport, Conn., Feb. 22, at 2:30 p. m.

Pittsburgh & Castle Shannon, annual meeting, at the office in Pittsburgh, Feb. 19, at 1 p. m.

Delaware, Lackawanna & Western, annual meeting, at the office, No. 26 Exchange Place, New York, Feb. 19, at 10 a. m.

Cleveland, Columbus, Cincinnati & Indianapolis, annual meeting, at the office in Cleveland, O., March 6.

Dividends.

Dividends have been declared as follows:

Detroit, Lansing & Northern, \$2 per share of preferred stock, payable Feb. 20. The company was reorganized in 1876, and the preferred stock represents a part of the former bonded debt.

United States Rolling Stock Co., 2½ per cent., gold, payable March 1, from the earnings of the second half of 1877. Chicago, Burlington & Quincy, the usual semi-annual dividend of 4 per cent., payable March 15. Transfer books will be closed from Feb. 23 to March 20.

Foreclosure Sales.

The Selma, Marion & Memphis road was to have been sold under foreclosure at Selma, Ala., Feb. 8. The road has been bankrupt and in trouble for several years. It is com-

pleted from Marion Junction, Ala., to Greensboro, 35 miles, and some work has been done beyond Greensboro.

The Chicago & Iowa road is advertised to be sold March 9, under foreclosure at the suit of John N. Denison and John W. Brooks, trustees. The road extends from Aurora, Ill., to Forreston, 80 miles.

The Utah Northern road will be sold at Ogden, Utah, March 20, under a decree of foreclosure granted at the suit of the Union Trust Company, of New York, Trustee. Arrangements for the reorganization of the company in the interest of the Union Pacific have already been made. The road is of 3 ft. gauge and is in operation from Ogden, Utah, to Franklin, Idaho, 80 miles; work is in progress on a further extension northward.

The West Wisconsin road is to be sold under foreclosure March 1. It is completed from Elroy, Wis., to Hudson, 177.5 miles. The sale is made to carry out the agreement of reorganization.

General Passenger and Ticket Agents' Association of Michigan.

A regular meeting of this association was held in Grand Rapids, Mich., Feb. 7. The following were present: From the Michigan Central, Henry C. Wentworth, E. C. Brown, L. Whitney, C. B. Bush; Detroit, Lansing & Northern, J. B. Mulliken, N. A. Carpenter; Grand Rapids & Indiana, A. B. Leet, J. R. Metheny; Canada Southern, F. E. Snow; Chicago & Michigan Lake Shore, A. M. Nichols; Fort Wayne, Jackson & Saginaw, S. K. Hooper; Flint & Pere Marquette, S. Keeler; Great Western of Canada, W. H. Firth. No changes in rates were discussed, but the expediency of a new constitution, to secure uniformity of practice in minor details, was the main subject considered. The meeting adjourned, to meet again on March 6 at Jackson.

Railroad Land Commissioners' Association.

The annual meeting of this association was to have taken place at the Lindell House, St. Louis, Feb. 6. No quorum appeared, however, though several of the leading members were there, and the members present adjourned, after uniting in a request to the Executive Committee to call a special meeting for May 15 next, at Chicago.

ELECTIONS AND APPOINTMENTS.

Baltimore & Delta.—Mr. Philip Dandridge, of Winchester, Va., has been appointed Chief Engineer. Mr. Dandridge was formerly for a long time in the employ of the Baltimore & Ohio, and has been lately on the Cincinnati Southern.

Belvidere Delaware.—At the annual meeting in Trenton, N. J., last week, the following directors were chosen: G. B. Roberts, Josiah Bacon, Strickland Kneass, John M. Kennedy, A. J. Derbyshire, Charles Sitgreaves, Lewis Perrine, Charles Bartles, Ashbel Welch. The road is leased to the Pennsylvania Railroad Company.

Billerica & Bedford.—The creditors have chosen as Assignees in bankruptcy John C. Moulton, Treasurer of the Rattle Car Company; Adams Ayer, President of the Hinkley Locomotive Works, and Frederick P. Morley, of Boston. They have appointed Mr. George E. Mansfield Manager of the road.

Blue Line.—It is reported that Mr. B. B. Mitchell will be General Manager in place of Mr. J. B. Carson, who goes to the Hannibal & St. Joseph. Mr. Mitchell has been Mr. Carson's assistant for some years.

Boston, Barre & Gardner.—At the annual meeting in Worcester, Mass., Feb. 7, the following directors were chosen: Lewis Barnard, Calvin Foster, Wm. H. Morse, Charles B. Pratt, Wm. W. Rice, Stephen Salisbury, George S. Barton, Worcester, Mass.; Isaac N. Ross, Holden, Mass.; Charles Heywood, Levi Heywood, Gardner, Mass.; Nelson D. White, Winchendon, Mass. The only new director is Mr. Barton, who replaces Hon. Ginery Twichell, who declined re-election as President or director. The board elected Wm. H. Morse President; Charles Heywood, Vice-President.

Boston, Clinton, Fitchburg & New Bedford.—At the annual meeting in South Framingham, Mass., Feb. 5, the following directors were chosen: Wm. W. Crapo, Wm. J. Rotch, New Bedford, Mass.; John E. Sanford, Taunton, Mass.; Charles E. Crocker, Fitchburg, Mass.; Lyman Nichols, Nathaniel Thayer, Nathaniel Thayer, Jr., George A. Torrey, Wm. B. Wood, Boston.

Boston & Albany.—At the annual meeting in Boston, Feb. 13, the following directors were chosen: Chester W. Chapin, Springfield, Mass.; D. Waldo Lincoln, Worcester, Mass.; Ignatius Sargent, Brookline, Mass.; George O. Crocker, New Bedford, Mass.; Henry Colt, Pittsfield, Mass.; Edward B. Gillett, Westfield, Mass.; John Cummings, Woburn, Mass.; Moses Kimball, Boston. There is no change from last year.

Boston & Foughkeepsie.—The officers of this company are: President, Egbert Hollister, Great Barrington, Mass.; Secretary, H. F. Keith, Sandisfield, Mass.; Treasurer, David Dazell, Jr., Egremont, Mass.

Chicago, Rock Island & Pacific.—The title of Mr. John T. Sanford is not General Freight Agent, but "Freight Traffic Manager." His office is in Chicago, and he will have charge of the freight relations of the company with connecting and competing railroads and transportation lines. All correspondence in relation to joint rates, divisions, claims on account of through traffic, etc., should be addressed to him. Mr. Wm. M. Sage is appointed General Freight Agent, and will have charge of all matters relating to the local freight traffic of the road. Mr. Paul J. Sanford succeeds John T. Sanford as General Eastern Agent.

Chicago & Pacific.—At the annual meeting in Chicago, Feb. 5, the following directors were chosen: George F. Bowen, Alfred F. Brown, Thomas S. Dobbins, L. P. Hilliard, Walter L. Pease, F. A. Winkelman, John S. Wilcox. The board elected T. S. Dobbins President; W. L. Pease, Vice-President; George F. Bowen, Secretary and Treasurer; John S. Wilcox, Solicitor.

Civil Engineers' Club of the Northwest.—The following gentlemen were elected members at the last monthly meeting: J. R. Forsyth, Charles McRitchie, W. G. Kay and J. M. Whitman, all of Chicago.

Dayton & Southeastern.—Mr. J. E. Gimperling has been appointed General Passenger Agent. He was formerly Superintendent of the Indianapolis, Bloomington & Western, and was at one time on the Ohio & Mississippi.

Denver & Rio Grande.—The following circular is dated Feb. 1: "All the accounts of the Denver & Rio Grande Railway Company will from this date be under the exclusive control of the Treasurer, R. F. Weithree, whose instructions with regard thereto will be obeyed. All reports and correspondence heretofore addressed to William Wagner (Auditor), will hereafter be sent to the Treasurer. Mr. William Wagner has been this day elected Secretary of the company."

Flemington.—At the annual meeting in Trenton, N. J., recently, the following directors were chosen: Charles Bartles, Ashbel Welch, Thomas B. Fidler, Samuel Lilly, Wm. P. Emery, Alexander Wurts, John C. Hopewell, Benjamin Fish, Robert F. Stockton. The road is leased to the Pennsylvania Railroad Company.

Framingham & Lowell.—At the annual meeting in South Framingham, Mass., Feb. 7, the following directors were chosen: Wm. D. Peck, Wm. F. Ellis, E. P. Carpenter, George A. Torrey, James W. Clarke, S. B. Rogers, Ralph Warner, Jacob Nichols, S. N. Aldrich. The road is leased to the Boston, Clinton, Fitchburg & New Bedford.

Great Western, of Canada.—Mr. W. S. Champ, late Paymaster, has been appointed Cashier, with office at Hamilton, Ont.

Green Lick.—At the annual meeting in Scottdale, Pa., recently, the following were chosen: President, George H. Everson; directors, W. H. Everson, George A. Hogg, C. L. Graff, J. R. Stauffer, W. T. Brown, J. F. Overholt, J. L. Shallenberger, D. H. Pershing; Secretary and Treasurer, Nathaniel Miles.

Huntingdon & Broad Top.—At the annual meeting in Philadelphia, Feb. 5, the following were chosen: President, B. Andrews Knight; directors, Rathmell Wilson, John Devereux, I. V. Williamson, Jas. Long, William Whittaker, Joseph H. Trotter, D. J. Morrell, Wm. F. Jenks, Charles W. Wharton, Thomas R. Patton, James Day Rowland, Jacob Naylor; Secretary and Treasurer, J. P. Aertsen.

Illinois & St. Louis.—Mr. C. H. Chorman has been appointed Superintendent, in place of J. M. Gilligan, resigned.

Kansas Pacific.—Mr. Peter B. Groat has been appointed General Passenger Agent. He formerly held the same position on the Hannibal & St. Joseph. Mr. D. E. Cornell remains with the road as General Ticket Agent.

Lancaster.—The board has elected the following officers: President, George A. Parker, Lancaster, Mass.; Treasurer, S. R. Merrick, Lancaster, Mass.

Logansport, Crawfordsville & Southwestern.—At the annual meeting in Crawfordsville, Ind., Feb. 2, the following directors were chosen: S. D. Schuyler, R. B. F. Prim, J. E. Martin, J. Collett, Joseph Milligan, W. R. Carter, J. N. Rice, J. Q. Brown, A. H. Blair, John G. Clark, J. H. Paris, F. W. Jones, H. M. Perry. The board elected J. Milligan President; W. R. Carter, Vice-President; J. H. Paris, Secretary; J. G. Clark, Treasurer; R. B. F. Prim, Attorney.

Mercer & Somerset.—At the annual meeting in Trenton, N. J., last week, the following directors were chosen: Thos. Hanlon, Geo. B. Roberts, Thomas A. Scott, Strickland Kneass, Martin A. Howell, Augustus Van Zandt, Lewis Perrine, Benjamin Fish, Levi F. Atchley, A. L. Dennis, Ashbel Welch. The road is leased to the Pennsylvania Railroad Company.

Milwaukee & Dubuque.—At the annual meeting in Milwaukee, Wis., Jan. 31, the following directors were chosen: H. W. Benjamin, George Brinson, Wm. Carter, T. H. Judd, Henry Palmer, C. W. Smith.

New Castle & Franklin.—At the annual meeting in New Castle, Pa., recently, the following directors were chosen: Cyrus Clarke, George C. Reis, A. L. Crawford, R. W. Cunningham, W. Y. Greer, George V. Boyles, New Castle, Pa.; B. Magoffin, S. R. Mason, Mercer, Pa.; J. Bonner, Stoneboro, Pa. The board elected Cyrus Clarke President and Treasurer; George C. Reis, Vice-President; J. M. Power, Secretary and Auditor.

New London Northern.—At the annual meeting in New London, Conn., Feb. 6, the following directors were chosen: Dr. Charles Osgood, Norwich, Conn.; Wm. W. Billings, Wm. H. Barnes, Augustus Brandagee, Robert Coit, J. N. Harris, Benjamin Stark, New London, Conn.; Thomas Ramsdell, Windham, Conn.; Wm. A. Hill, Boston; Wm. Allen Butler, Frederick Taylor, New York. The board elected Dr. Charles Osgood President; Robert Coit, Secretary and Treasurer.

Ohio State Inspector of Bridges.—Mr. Michael Haviland having declined this position, Railroad Commissioner Bell has appointed Mr. Wm. J. Jackson, of Piqua.

Pensacola.—Mr. W. D. Chipley, General Manager of the road, has been appointed Receiver in a suit for foreclosure of mortgage.

Philadelphia & Erie.—At the annual meeting in Philadelphia, Feb. 11, the following directors were chosen by the stockholders: Alexander Biddle, A. J. Derbyshire, J. N. Dubarry, Joseph W. Gaskell, Strickland Kneass, Samuel G. Lewis, Wistar Morris, J. Alexander Simpson, Robert Thompson, Samuel G. Thompson.

Providence & Worcester.—The new board has re-elected Wm. S. Slater, President, and John R. Balch, Treasurer.

United States Rolling Stock Co.—At the annual meeting in New York, Feb. 11, the old board of trustees was re-elected, as follows: James B. Hodgskin, Wm. H. Guion, Adrian Iselin, E. G. Fabbri, Jonathan Edwards.

Washington & Ohio.—The Virginia Circuit Court has appointed Mr. Cassius F. Lee, of Fairfax County, Va., Receiver. He is a director of the company.

PERSONAL.

—Mr. Wm. D. Hilton has resigned his position as Superintendent of the Providence & Worcester Railroad, his resignation to take effect April 1. At the recent annual meeting several stockholders took occasion to criticize Mr. Hilton very sharply, because he was interested in other business and did not give his full time to the management of the road. It was then understood that he would probably retire from his position.

—Mr. Edward Kilbourne, an old settler of Keokuk, Ia., died in that city Feb. 3, aged 64 years. He was one of the first directors of the Des Moines Valley Railroad Company, and was active in the construction of that road. He was also one of the builders of the road from Keokuk to Fort Madison, now part of the Keokuk Branch of the Chicago, Burlington & Quincy.

—When the late Capt. Eber B. Ward, President of the Flint & Pere Marquette Company, died several years ago, it was supposed that he had left a very large estate. By his will he left his property, pine lands, mills, docks, etc., at Ludington, Mich., to his wife. Owing to the depreciation in value of much of his property, it is now found that the estate, outside of this Ludington property, is insufficient to pay the debts, and an arrangement has accordingly been completed with the creditors by which Mr. Ward makes up the \$300,000 deficiency by paying \$50,000 in cash and putting a mortgage for \$250,000 on the property, which is valued now at \$600,000.

—Mr. Robert Bayard, for a long time a director and President of the St. Louis, Alton & Terre Haute Railroad Company, died at his residence in New York, Feb. 4, aged 80 years.

—Col. N. G. Bryson, for 12 years past Secretary and Treasurer of the Vicksburg & Meridian Railroad Company, died in Vicksburg, Miss., Feb. 4. He was an old and esteemed citizen, and had been Mayor of the city for several years.

—Mr. John Schiff, for many years a resident of Cincinnati and one of the trustees of the Cincinnati Southern Railroad, died at his residence near that city Feb. 9. He was formerly a brewer, but retired from business several years ago, having accumulated a fortune. He had held several public offices.

—A telegram announces the death of Mr. John F. Tracy

at Erie, Pa., Feb. 13. Mr. Tracy had been in failing health for some time, his disease, we believe, being softening of the brain. He was for a long time President of the Chicago, Rock Island & Pacific Company, retiring from that position last year, and was at one time President of the Chicago & Northwestern also. Mr. Tracy was known for years as an active and successful operator in stocks and was a man of large wealth, but at the last he was unsuccessful, chiefly, it is said, on account of the condition of his health and his impaired mental powers, and he probably lost a very large part of his property.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

Year ending Nov. 30:	1876-77.	1875-76.	Inc. or Dec.	P. c.
Ind., Bloom. & W.				
Main Line.....	\$1,137,896	\$1,372,021	Dec.	\$234,125 17.1
Expenses.....	788,328	1,035,438	Dec.	247,110 23.9
Net earnings.....	\$349,568	\$336,583	Inc.	\$12,985 3.9
Earn. per mile.....	5,380	6,487	Dec.	1,109 17.1
P. c. of exp's.....	69.28	75.47	Dec.	6.19 8.2
Ind., Bloom. & W.				
West. Ext'n's'n	143,344	186,397	Dec.	43,053 23.1
Expenses.....	188,451	192,743	Dec.	4,292 2.2
Deficit.....	\$45,107	\$6,346	Inc.	\$38,761 610.8
Earn. per mile.....	1,090	1,417	Dec.	327 23.1
P. c. of exp's.....	131.47	103.40	Inc.	28.07 27.1

Year ending Dec. 31:	1877.	1876.	Inc. or Dec.	P. c.
Chi., Bur. & Q.	\$12,379,202	\$12,003,950	Inc.	\$375,252 3.1
Chi. & Northw'n.	12,129,392	12,467,540	Dec.	338,148 2.7
Chi. & Pacific.....	183,204			
Net earnings.....	63,708			
P. c. of exp's.....	65.28			
Clev., Mt. Vernon				
& Delaware.....	383,288	372,194	Inc.	11,124 3.0
Net earnings.....	78,885	62,749	Inc.	16,136 25.7
P. c. of exp's.....	70.48	83.17	Dec.	3.69 4.4
Denver & Rio G.	773,312			
Net earnings.....	367,750			
P. c. of exp's.....	52.47			
Huntingdon & B.				
Top.....	261,410	270,441	Dec.	9,031 3.3
Net earnings.....	110,077	111,063	Inc.	986 0.9
P. c. of exp's.....	57.30	58.93	Dec.	1.63 2.8
Kansas Pacific.....	3,284,734	3,000,799	Inc.	283,935 9.4
Net earnings.....	1,367,777	1,280,467	Inc.	87,310 6.8
P. c. of exp's.....	58.35	57.34	Inc.	1.01 1.8
Louis. & Nash.....	5,564,700	5,154,922	Inc.	409,778 7.9
Net earnings.....	2,341,620	2,082,308	Inc.	259,312 12.5
P. c. of exp's.....	57.92	59.60	Dec.	1.68 2.8
Paducah & Mem.	188,583	207,473	Dec.	17,890 8.6
Net earnings.....	63,970	46,294	Inc.	17,676 38.3
P. c. of exp's.....	66.11	77.88	Dec.	11.77 15.1
St. Paul & Sioux				
City.....	544,881	574,772	Dec.	29,891 5.2
Net earnings.....	207,547	223,094	Dec.	15,547 7.0
P. c. of exp's.....	61.90	61.16	Inc.	0.74 1.2
St. Paul City & St.				
Paul.....	342,692	359,132	Dec.	16,440 4.6
Net earnings.....	115,224	117,396	Dec.	2,172 1.9
P. c. of exp's.....	66.32	67.34	Dec.	1.02 1.5
Union Pacific.....	12,473,202	12,886,850	Dec.	413,657 3.2
Net earnings.....	7,152,411	7,477,411	Dec.	325,000 4.3
P. c. of exp's.....	42.66	41.98	Inc.	0.68 1.6

Four months ending Jan. 31:	1878.	1877.	Inc. or Dec.	P. c.
Boston & Albany	\$2,394,422	\$2,100,775	Inc.	\$293,647 14.0
Net earnings.....	660,750	322,792	Inc.	337,958 104.7
P. c. of exp's.....	72.23	84.67	Dec.	12.44 14.7

Month of December:	1878.	1877.	Inc. or Dec.	P. c.
Atlantic & Great				
Western.....	\$300,130	\$304,047	Dec.	3,917 1.3
Chi., Burlington &				
Quincy.....	962,148	926,120	Inc.	136,028 16.5
Chi. & Northw'n.	928,742	926,540	Inc.	2,202 0.2
Louisville & Nash.	540,000	490,651	Inc.	49,349 10.6
Union Pacific.....	925,852	990,986	Dec.	65,134 6.6

Month of January:	1878.	1877.		
Atchison, Topeka				
Santa Fe.....	\$171,000	\$134,864	Inc.	\$36,136 26.8
Central Pacific.....	1,125,000	1,170,615	Dec.	45,615 3.9
Chicago & Alton.	316,711	351,908	Dec.	34,897 9.9
Clev., Mt. Vernon				
& Delaware.....	29,150	26,424	Inc.	2,726 10.3
Denver & Rio G.	60,015	43,270	Inc.	16,745 38.7
Ill. Central.....	444,751	367,401	Inc.	77,350 21.1
field Div. "Spring"	19,507			
Kansas Pacific.....	198,040	180,240	Inc.	18,400 10.2
Missouri, Kan. &				
Texas.....	217,029	237,032	Dec.	20,003 8.4
Missouri Pacific.....	294,811	265,903	Inc.	28,908 10.9
St. L., A. & T. H.				
Belleville Line.....	39,842	51,370	Dec.	11,528 22.4
St. L., I. Mt. & So.	389,400	377,203	Inc.	12,197 3.2
St. Louis & San F.	97,542	100,487	Dec.	2,945 2.9
T. Peoria & War.	130,466	78,570	Inc.	51,896 66.0
Wabash.....	390,509	315,525	Inc.	74,984 23.8

Week ending Feb. 1:	1878.	1877.	Inc. or Dec.	P. c.
Gt. West., of Can.	\$90,658	\$79,576	Inc.	\$11,082 13.9

Week ending Feb. 2:	1878.	1877.	Inc. or Dec.	P. c.
Grand Trunk.....	\$185,374	\$178,371	Inc.	\$7,003 3.9

Grain Movement.

Receipts and shipments of grain of all kinds for the week ending Feb. 2, were, in bushels:

	1878.	1877.	Increase.	P. c.
Northwestern receipts.....	2,520,392	1,898,739	621,653	35.0
" shipments.....	2,272,038	829,521	1,332,537	158.0
Atlantic receipts.....	3,798,633	2,022,361	1,776,272	87.8

The receipts this year at Northwestern markets, though still great, were much less than for the two weeks previous; the shipments thence were extraordinarily large for the winter, but somewhat less than the previous week, and the receipts at the Atlantic were the largest of the winter, and probably the largest ever received during any one week in the winter. Of these latter, 42.9 per cent. were at New York, 22.9 at Baltimore, 18.5 at Philadelphia, 10.9 at Boston, 4.7 at New Orleans, and 0.1 at Portland.

For the month of January, or rather the five weeks ending Feb. 2, the receipts and shipments of flour and grain were as follows, flour in barrels and grain in bushels:

	1878.	1877.	Inc. or Dec.	P. c.
Flour:				
Northwestern rec'ts.	559,105	425,282	Inc.	133,823 314.9
" shipments.....	525,517	411,083	Inc.	114,434 27.4
Atlantic receipts.....	817,490	321,139	Inc.	496,351 57.0
Wheat:				
Northwestern rec'ts.	5,812,571	1,881,441	Inc.	3,931,130 209.1
" shipments.....	4,619,719	632,168	Inc.	3,987,551 608.4
Atlantic receipts.....	5,969,925	676,569	Inc.	5,293,356 781.5
Corn:				
Northwestern rec'ts.	4,767,411	5,867,593	Dec.	1,100,182 18.7
" shipments.....	2,701,453	2,342,440	Inc.	359,013 15.3
Atlantic receipts.....	8,225,249	5,582,027	Inc.	2,643,222 47.4

All Grains:

	1878.	1877.	Inc. or Dec.	P. c.
Northwestern rec'ts.	13,732,424	9,809,081	Inc.	3,923,343 40.0
" shipments.....	8,755,323	4,057,879	Inc.	4,697,444 115.8
Atlantic receipts.....	10,018,993	7,854,054	Inc.	2,164,939 104.0

Such enormous increases we have never had to chronicle before, but they are accounted for by a combination of causes: first, this year's business was actually enormous, as

will be seen by the comparison of five years below; and, second, last year the movement was limited, to begin with, by the very small amount of wheat in the country, and in the second place, by the snow blockade, which prevented many shipments that would otherwise have been made. It will be seen that the receipts of corn at Northwestern markets were larger last year than this, though the receipts at the Atlantic are much larger this year. This indicates that the chief corn supply this year is coming from roads which do not carry to the great Northwestern grain markets.

The movement of grain of all kinds for the month, for each of the past five years, has been:

	1878.	1877.	1876.	1875.	1874.
Northw'n receipts.....	13,732,424	9,809,081	11,184,440	12,409,300	15,901,076
Northw'n shipments.....	8,755,323	4,057,879	5,969,825	4,755,863	7,395,267
Atlantic receipts.....	10,018,993	7,854,054	11,003,583	9,571,973	11,101,123

Thus the business this year is the largest on record, with the exception of receipts at the Northwestern markets in 1874.

For January, and for the seven months of the California crop year ending Jan. 31, San Francisco wheat exports were as follows:

	1877-78.	1876-77.	Decrease.	P. c.
January, bushels.....	496,457	1,298,500	802,043	61.8
Seven months, bushels.....	4,085,943	14,720,500	10,634,557	72.2

Petroleum Exports.

The exports of petroleum for the month, from Jan. 1 to Feb. 2, were, in gallons:

	1878.	1877.	1876.	1875.
From				
New York.....	11,024,539	15,391,710	17,474,824	12,138,202
Boston.....	348,573	68,904	279,397	199,680
Philadelphia.....	2,081,396	3,370,055	6,723,732	3,111,537
Baltimore.....	2,719,528	1,409,842	4,370,960	2,902,361
Portland.....	500	979,434		
Totals.....	16,174,536	21,219,945	28,848,933	18,348,780

The decrease since last year is 24 per cent., and the decrease at New York is 28 per cent. There is a decrease of 38 per cent. at Philadelphia, and an increase of 93 per cent. at Baltimore. The exports have not been so small in January since 1873, though the price is low.

Coal Movement.

Coal tonnages are reported for the month ending Feb. 2, as follows, the tonnage in each case being only that originating on the line to which it is credited:

	1878.	1877.	Inc. or Dec.	P. c.
Anthracite:				
Philadelphia & Reading.	210,171	332,644	Dec.	122,473 36.8
Northern Central, from				
Shamokin Division, and				
Summit Branch R. R.	33,406	33,940	Dec.	474 1.4
Danville, Hazleton &				
Wilkesbarre.....	674	416	Inc.	258 61.4
Central, of N. J., Lehigh				
Division.....	132,208	141,879	Dec.	9,671 6.8
Lehigh Valley.....	322,493	269,273	Inc.	53,220 19.8
Penna. & New York.....	1,609	3,451	Dec.	1,842 52.6
Delaware, Lack. & West.	200,058	171,922	Inc.	28,136 16.9
Del. & Hudson Canal Co.	247,905	163,707	Inc.	84,198 51.5
Pennsylvania Coal Co.	37,940	72,848	Dec.	34,908 20.5
State Line & Sullivan.....	3,508	1,300	Inc.	2,208 157.9
Total.....	1,211,022	1,191,440	Inc.	19,582 1.6

Semi-bituminous:	1878.	1877.	Inc. or Dec.	P. c.
Cumberland, all lines.....	75,538	52,432	Inc.	23,106 44.1
Huntingdon & Broad Top.	12,752	11,678	Inc.	1,074 9.2
Tyrone & Clearfield.....	90,189	103,546	Dec.	13,357 12.9
Total, semi-bituminous.	178,479	167,656	Inc.	10,823 6.5

Bituminous:	1878.	1877.	Inc. or Dec.	P. c.
Barclay.....	26,110	38,892	Dec.	12,782 33.1

The anthracite tonnage of the Belvidere Division, Pennsylvania Railroad, for the month of January was:

	1878.	1877.	Increase.	P. c.
South Amboy for shipment.	77,487	22,952	54,535	237.6
Local distribution on N. J. lines.....	14,890	14,312	578	4.0
Compan's use on N. J. lines.	8,922	7,113	1,809	25.1
Totals.....	101,299	44,377	56,922	128.2

Of the total this year 45,779 tons were from the Lehigh and 55,320 tons from the Wyoming Region.

The shipments of coal from the mines on the line of the Paducah & Elizabethtown Railroad in Kentucky were: 1877, 216,000 tons; 1876, 188,360 tons; 1875, 144,300 tons; increase, 1877 over 1876, 27,640 tons, or 14.7 per cent.; 1877 over 1875, 71,800 tons, or 49.8 per cent. The trade last year could have been increased, but the company was unable to furnish all the cars required.

A general suspension of coal mining throughout the Schuylkill Region began Feb. 11 and will continue for two weeks. The object is to reduce production in accordance with the allotment made by the Anthracite Board of Control.

West-Bound Freight Rates.

It is announced that at the recent meeting of officers of the trunk lines in New York new rates on west-bound freight were agreed upon, to go into effect as soon as all the lines should accept them. The new rates are as follows per 100 lbs. from New York to Chicago: First-class, 75 cents; second, 60 cents; third, 50 cents; fourth, 40 cents. The old rates were \$1 on first, 80 cents on second, 60 on third and 45 on fourth-class freight. It is stated that all the lines have agreed on these new rates except the Boston roads, which have not yet been heard from.

THE SCRAP HEAP.

Railroad Manufactures.

The Southern States Coal, Iron & Land Co. is making arrangements to build a number of coal and iron cars for its own use, in its shops at South Pittsburgh, Tenn.

The Niles Iron Co., at Niles, O., is running its sheet-iron mill and a part of the bar mill.

The Altoona (Pa.) Rolling Mill is now running full double turn.

The Phoenix Iron Co., at Phoenixville, Pa., has erected 22 new forges in its new mills for the purpose of making compound beams.

The Pittsburgh Locomotive Works have orders for 20 locomotives for the Pittsburgh & Lake Erie, and two for the Scioto Valley road. The works lately completed for the Crescent Steel Works a pair of stationary engines with 18 by 22 in. cylinders and balanced slide valves.

The United States Wind Engine & Pump Co., at Batavia, Ill., recently shipped a car-load of their wind-mills to California.

The foundry at the Chicago, Burlington & Quincy carshops in Aurora, Ill., is turning out 83 car-wheels per day, besides a large amount of other work.

Carnegie Brothers & Co., Union Iron Mills, have purchased from the Combination Trust Company, trustees for the Wheeler patents, the exclusive right to manufacture in the United States bridge structures and parts thereof, roofs for buildings and parts thereof, elevated railway substructure and parts thereof, viaducts and parts thereof, of combined

iron and steel, or what is known as Wheeler's iron-clad steel. —Pittsburgh Manufacturer.

An order has been given for the construction of a considerable number of new box cars in the Indianapolis, Peru & Chicago shops at Peru, Ind.

Hoopes & Townsend, of Philadelphia, have sent 27,000 pounds of their bolts, nuts and rivets to New South Wales (Australia).

The Ohio Falls Car Co., at Jeffersonville, Ind., recently delivered several new passenger coaches to the Burlington, Cedar Rapids & Northern Road.

The Wyandotte (Mich.) Rolling Mill Co. was last week adjudged bankrupt on its own petition in the United States District Court at Detroit. Mr. V. K. Moore was appointed Assignee provisionally.

The iron highway bridge over the Des Moines River, at Bonaparte, Ia., of which some mention was made last week, was built by the King Iron Bridge Co., of Cleveland, O. It is a double-intersection Pratt truss, 900 feet long, and is claimed as the finest highway bridge west of the Mississippi.

The rolling mills of the Milwaukee Iron Co. were sold in Milwaukee, Wis., Feb. 7

companies in Baltimore, Feb. 5, it was resolved to consolidate this company and the Baltimore, Hampden & Towson town as soon as the necessary authority can be obtained from the Legislature. The Baltimore & Delta Company is organized to build a narrow-gauge road from Baltimore north by east to Delta, Pa., near the Maryland line, about 35 miles. The Baltimore, Hampden & Towson town has been at work some time on a short suburban line out of Baltimore.

Bellaire & Southwestern.—The directors have resolved to issue \$60,000 in bonds for the purpose of extending the road from the present terminus at Wegee Mills, six miles from Bellaire, O., to Armstrong's Mill, a distance of 18 miles. When that point is reached \$60,000 more will be issued to build another section of 18 miles, to Woodsfield.

BillERICA & Bedford.—This road is now in possession of the assignees in bankruptcy as chosen by the creditors. They have retained Mr. George E. Mansfield as Manager, and will continue to operate the road.

Boston, Clinton, Fitchburg & New Bedford.—At the annual meeting held Feb. 5, the stockholders voted to fix the time of holding the annual meeting hereafter for the first Tuesday in December, instead of the first Tuesday in February.

Boston, Hoosac Tunnel & Western.—The Attorney General of New York, on application of this company, has begun proceedings in the nature of a *quo warranto* to forfeit the charter of the Albany & Vermont Railroad Company on account of the abandonment of its road. To save its rights in the existing track west of the Hudson River, the company has given notice to the Court that it desires to discontinue its road east of the river. The Court will probably allow this plea. The object of the proceeding is to confirm the Boston, Hoosac Tunnel & Western Company in possession of the old Albany & Vermont road-bed through the Hoosac Valley.

Another difficulty has arisen to delay the connection of the road with the tunnel. The Troy & Boston Company now refuses to allow the company the use of the Southern Vermont road, the short line from North Adams across the southwest corner of Vermont to the New York line. This section of road is part of the Troy & Greenfield line and belongs to the State of Massachusetts, but it is leased to the Troy & Boston Company under a lease made many years ago, and is entirely under the control of that company so long as the conditions of the lease are complied with. No new road can be built through Vermont without a special charter, so that a parallel track cannot be put down at present.

Boston & Poughkeepsie.—The line of this projected road is from the New York & Harlem, at Copake, N. Y., east through Egremont, Mass., to Great Barrington, with a possible extension to Westfield, about 50 miles in all. The company has asked the State of Massachusetts for a loan of \$17,000 per mile, to be paid as the work is completed.

Cairo & St. Louis.—The Receiver having completed the new line into Cairo, Ill., trains are again running through that city, after a suspension of several months. The new line replaces the old road-bed washed out by high water in the Mississippi.

Canadian Pacific.—The contractors on this road now have the track down and a construction train running 55 miles east of Winnipeg. The work is progressing steadily, and about 80 miles are to be finished next month.

It is announced that the Pembina Branch is to be completed at once, in the hope that the Minnesota connections will not be long delayed.

Canada Southern.—It is reported that the trains are to be withdrawn from the Chicago & Canada Southern road and the road abandoned, and there is much excitement along the line in consequence. The road is completed from Slocum Junction, Mich., southwest to Fayette, O., 67 miles, and has never, we believe, earned its running expenses.

Central Vermont.—A hearing was had in St. Albans, Vt., last week, before the Court of Chancery on the bill filed by the Vermont & Canada Company asking for the appointment of a receiver for its road and the Vermont Central, and for a decree to determine the relative standing of the various liens on those roads. The application was opposed by the Central Vermont Company, and also by several bondholders of the Vermont Central. The Grand Trunk Company appeared as a party in interest to the extent of the traffic balances due to it by the Central Vermont. The Central Vermont argued that the already existing receivership was sufficient, and that any change would break up present contracts and otherwise disturb relations with connecting roads. On behalf of the Vermont & Canada it was urged that the large sum due that company as rental was continually increasing, while the present management absorbed all the net earnings of the roads, and was supposed to be applying them to the payment of the floating debt. Counsel for the Rutland Company appeared to protest against any action which would imperil the claim of that company for rental. The Court took the case into consideration, promising to give a decision soon.

Charlotte, Columbia & Augusta.—The depot of this road in Augusta, Ga., was almost destroyed by a cyclone on the morning of Feb. 8. One side of the freight house was blown down and the roof fell, leaving the building a wreck and doing much damage to freight. The same storm blew two loaded box cars from the track and down a bank.

Chicago & Alton.—Notice is given that proposals will be received at the office of the Chief Engineer of this company, in Chicago, for the grading, masonry, trestle and pile bridges, on sections Nos. 1 to 84, inclusive (with the exception of the bridge over the Missouri River), on the line of the proposed extension of this company's railway from Mexico to Marshall in Missouri. Profiles, specifications, form of contract and proposals may be seen at the office of the Chief Engineer, Chicago. Contractors will be required to give satisfactory security for the completion of the work according to contract, and also for the prompt payment for all supplies purchased and labor employed while prosecuting the work. Sub-contracting will be prohibited, and contractors are requested to bid for no more work than can be done under their personal supervision. The work will be paid for in cash, and will not be contracted except at the lowest cash prices. Proposals should be inclosed and addressed to the Chief Engineer of the Chicago & Alton Railroad Company, Chicago, Ill., and marked proposals for work in Missouri.

Columbus & Northwestern.—This new company has purchased the right of way and other property on its line which belonged to the old Continental Railroad Company. The officers of the company are now soliciting local aid along the line. The projected line is from Fort Wayne, Ind., southeast to Columbus, O., 147 miles, with an extension from Columbus to McConnellsville, 78 miles.

Covington, Columbus & Black Hills.—The unsecured floating debt of this company is reported at \$75,150, due for supplies, materials, labor and similar accounts. There are \$120,000 first and \$300,000 second-mortgage bonds which have not been sold, but are pledged as security for a

debt of \$43,500, and a further claim for \$35,000, the latter due on the purchase of the property of the Ferry & Trans-fer Company.

Dayton & Southeastern.—President Mead, of this company, reports the road finished and in operation to Musselman's, 69 miles from Dayton, O. From Musselman's to Wellston, 46.2 miles, the road is not finished, and no arrangements have been made for its completion. The sum of \$82,414.14 has been spent on this section, and a further expenditure of \$199,242.66 is required to finish it. To meet this and a floating debt of \$103,813.08 the company has uncollected stock subscriptions amounting to \$207,538.86, of which one-half is believed to be good, and \$313,400 unissued first mortgage bonds. Efforts have been made to sell these bonds, but so far without success. The amount of bonds so far issued is \$286,600, of which \$14,800 were sold and \$271,800 issued to the contractors, \$138,700 at 80 and \$133,100 at 70 cents on the dollar. The equipment now on the road is 4 engines, 4 passenger and 1 baggage car, 30 box and 50 flat cars. Ten of the flat cars are leased, the rest owned. More cars are much needed.

A permanent location for a terminus in Dayton has been secured by leasing from the city the canal basin property at a nominal rental of \$100 a year for 10 years, with privilege of renewal, the city also giving the right of way to the property.

The company has leased the joint use of 11 miles of its road, from Allentown to Washington, to the Columbus, Washington & Cincinnati road at a rental of \$3,000 per year for three years and \$4,000 per year thereafter. It has also leased the use of five miles of track from Washington to the Springfield, Jackson & Pomeroy for 10 years at \$500 per mile for one year; \$600 per mile per year for four years, and \$700 per mile per year for the remaining five years.

The earnings of the road have been as follows:

Dec. 1, 1876, to May 31, 1877, Xenia to Washington, 28½ miles.....	\$9,152.28
June 1, 1877, to Oct. 31, 1877, Dayton to Washington, 48 miles.....	18,719.35
Nov. 1, 1877, to Dec. 31, 1877, Dayton to Musselmans, 69 miles.....	11,339.22
Total, 13 months, average 42¼ miles.....	\$39,210.85

The working expenses for November and December were \$8,589.46, leaving the net earnings for the two months \$2,749.76. By the connection with the Marietta & Cincinnati, at Musselman's, the road has secured a considerable traffic in Jackson County coal and Hanging Rock iron to Dayton.

Denison & Southeastern.—The track on this road is now laid to Belleville, 15 miles from Denison, Texas. Work is progressing as fast as the ties and rails are received.

Denver & Rio Grande.—The Treasurer's report for December on 304 miles of road, is as follows:

Freight earnings.....	\$55,775.68
Passenger, mail and express.....	16,043.53
Miscellaneous.....	353.60
Total (\$240.37 per mile).....	\$73,072.81
Expenses (61.70 per cent).....	45,061.20
Net earnings (\$92.04 per mile).....	\$27,981.61

The gross earnings include \$1,360 for transportation of mails and \$1,239.03 for troops and Government freight.

Dunkirk, Allegheny Valley & Pittsburgh.—Surveys have been begun for a branch from Warren, Pa., east by north to Bradford, the centre of the new Bradford oil region. The distance is about 35 miles, and the Olean, Bradford & Warren Company is also surveying a line between the two places.

Eastern.—The Eastern Railroad Company in New Hampshire, as a defendant in the suit brought by the Portsmouth, Great Falls & Conway bondholders, has filed its answer, which is substantially to the effect that the lease of the Conway road was made at the request of the Eastern of Massachusetts and that the road is in possession of that company, which receives all the income, and that this was the intention at the time of making the lease. It is further set forth that the Eastern Company in New Hampshire can do nothing, the property owned and nominally leased by it being in possession of the Eastern of Massachusetts, which pays no rental for the same. The Court is asked to consider the real facts of the case and to appoint a receiver for the income of the Conway road, so that it may be applied for the benefit of the real owners.

Erie.—In the matter of the charge of perjury against Receiver Jewett, the Supreme Court has decided that the Police Court must either commit the accused for trial, discharge him altogether or hold him to bail. Mr. Jewett was thereupon released on giving bail in \$10,000.

No further progress has been made in any of the many suits pending. In one of the McHenry suits an order has been granted for a referee to examine Receiver Jewett and also J. D. Ayres, Secretary of the Erie Reconstruction Committee in London.

Foxburg, St. Petersburg & Clarion.—This road is now completed to Jefferson City, Pa., five miles beyond the late terminus at Turkey City, and 12 miles from Foxburg, where it connects with the Allegheny Valley road. At Jefferson City it makes connection with the Enlenton, Shippensburg & Clarion road.

Framingham & Lowell.—At the annual meeting in South Framingham, Mass., last week, the directors reported that a plan had been agreed upon for the settlement of the floating debt. This debt consists of \$210,000 in notes, and a balance of \$345,479 due the Boston, Clinton, Fitchburg & New Bedford Company, lessee of the road. The lessee agrees to accept for this claim \$175,000 in stock of the company, and the holders of the notes agree to take an equal amount of stock. To carry out the agreement stockholders are asked to surrender four-fifths of their stock. As there are many small holders it is provided that each holder shall retain at least one share. The company will then be without floating debt, and the property will be represented by the \$511,000 stock and \$500,000 bonds now outstanding.

The report was accepted and the stockholders voted to approve the plan of settlement and to carry it into effect.

Galveston, Harrisburg & San Antonio.—Among the Pacific railroad propositions before Congress is a bill granting a subsidy or guarantee of \$15,000 per mile for an extension of this road from San Antonio, Texas, to El Paso, to connect there with the Southern Pacific road. The bill provides that the road shall be completed in six years, and it is urged as a military necessity.

Houston, East & West Texas.—The 35 miles of this road now completed are equipped with two locomotives, one passenger and 34 freight cars. Although not completed to any important town it has a considerable business in lumber carried to Houston, and is earning about \$150 per day from that source. The line is located from Houston, Tex., to Nacogdoches, 140 miles, and is to run to the State line in the direction of Shreveport, La., 225 miles. A large part of the line is through the timber belt of Eastern Texas, where there

is much pine, white oak and other valuable wood. The road has a land grant of 16 sections to the mile and has secured considerable local subscriptions. It is of 3 ft. gauge and laid with iron weighing 30 lbs. to the yard.

Illinois Central.—This company's report for January is as follows: During the month of January 828.18 acres of land were sold for \$5,449.09. The cash collected on land contracts was \$8,658.47. The traffic on the Main Line in Illinois (707 miles) was \$444,751 against \$367,401 in January, 1877, an increase of \$77,350, or 21.1 per cent. There was also an increase on the Iowa Division of \$35,167, making the gain on the entire line for the month \$112,517. In addition to the above the Springfield Division earned in January (as estimated) \$19,507.

Leavenworth, Lawrence & Galveston.—A suit brought by the State of Kansas to compel this company to repair the bridge at Lawrence was begun at Topeka, Kan., Feb. 4. The State filed its brief, and the company was given until Feb. 25 to put in an answer. The case will come up for final hearing on March 4.

Lebanon Springs.—Notwithstanding the decision of the Supreme Court, holding that the bonds issued by the town of Bennington, Vt., in aid of this road, were legal and valid, the other towns which issued bonds have decided to continue the contest and to refuse payment. The cases of all the towns are similar to that of Bennington, and there is little or no doubt that the Bennington decision will apply to all of them.

Louisville & Nashville.—This company makes the following statement for the half-year ending Dec. 31, the month of December being partly estimated:

	1877.	1876.	Increase.	P. c.
Gross earnings.....	\$3,007,006	\$2,757,633	\$249,373	9.0
Expenses.....	1,670,111	1,621,838	48,273	3.0
Net earnings.....	\$1,336,895	\$1,135,795	\$201,100	17.7
Six months' interest.....	850,000			
Sinking fund.....	75,000			
Total.....	\$925,000			
Surplus.....	\$411,895			

Out of this surplus the company recently declared a dividend of 1½ per cent. on the stock. The expenses were 55.54 per cent. of earnings in 1877, and 58.80 per cent. in 1876. The comparisons above are made with the corresponding half-year, the last-half of 1876.

The following circular has been issued by General Superintendent Rowland:

"Numerous frauds have been detected in the past year of changing and attempting to use expired annual passes over this line. To check this system of imposition as far as possible, I would respectfully request that all passes, annual or trip, issued by this company, which were void after Dec. 31, 1877, in the hands of your officers, be destroyed. The same will be done with similar passes over your line in the hands of officers of this road.

"It is believed that this will be the means of keeping passes out of the hands of unscrupulous persons, and checking the imposition referred to."

Manasquan Beach.—A company by this name has been organized to build a railroad from Squan or Sea Girt, N. J., southward down the beach to Lavallette, with some branches. The capital stock is to be \$1,100,000.

Minnesota State Railroad Bonds.—The question of payment of these bonds is not to be allowed to rest. The Committee on Public Lands of the State Senate last week reported as follows on a memorial from Selah Chamberlain, recommending: "That a bill be prepared for an act to be submitted to a vote of the people at the next general election offering to the holders of these bonds the whole of the 500,000 acres of internal improvement lands, and the proceeds of the sale of the lands in full payment and satisfaction of the whole of said lands. In the judgment of your committee the lands should be valued at a sum equal to the face value of the bonds, principal and simple interest, and any holder of the bonds should be authorized to surrender the same and receive the equivalent in land, the said land to be exempted from taxation for seven years from the time it should, under the operation of the act, be subject to entry with said bonds or until sold, or contracted to be sold, or leased, or used and embraced by the original purchaser. * *"

"The committee would say that they are unanimous in this recommendation, believing that it is the wish of the people of the State to adjust whatever may be due the holders of the bonds by the use of these lands. They so decided in 1870, when a similar proposition to the one we recommended was submitted to them, and if there had not been a limitation fixed to that act it would have long since have settled this question forever. The committee desire the Senate to express an opinion as to the advisability of bringing in such a bill."

The Senate adopted the recommendation with only one dissenting vote.

Mobile & Ohio.—The United States Supreme Court has recently made the following important order in the case of Ketchum and others against Duncan, on the motion to rescind the order suspending the operation of the *supersedes* in the case:

"It is ordered that the Circuit Court proceed with the execution of the decree appealed from upon Hays, Pierson and Du Fay filing in this Court a bond payable to the United States in the penal sum of \$75,000, with security to be approved by this Court, conditioned to pay to the appellants and those whom they or either of them legally represent in the appeal, the difference between the amount which they would respectively receive from the proceeds of the sale, in case the disputed coupons of 1874 are on this appeal disallowed as a part of the mortgage debt, and the amount they will receive if the mortgage property shall be sold and distributed under the decree as it stands."

In the case of Merlan and others a similar order has been made, as follows:

"It is ordered that the Circuit Court proceed with the execution of the decree appealed from upon the appellees filing in this court a bond payable to the United States in the penal sum of \$150,000, with security to be approved by this Court, conditioned for the payment to the appellants and those they lawfully represent in the appeal, such sum as they may be respectively entitled to receive from the proceeds of the sale of the mortgaged property over and above that given by the decree as it now stands, by reason of any reversal or modification by this Court of the order of the Circuit Court, directing payments to be made to the holders of the Tennessee substitution bonds in preference to the holders of the bonds secured by the mortgage to Ketchum and his associates."

New York, West Shore & Chicago.—Under a decree of the United States Circuit Court granted Feb. 5, holders of bonds of this defunct company are notified that they must appear and prove their bonds on or before March 23, at noon, before John A. Shields, Master in the case, at his office in the Post Office Building, New York.

Northern Pacific.—The Portland (Oregon) Bee reports that this company has been making some preliminary sur-

veys, and has found a practicable route for a line from Tacoma, Wash. Terr., to Wallula over the Cascade Mountains. The line run leaves the Puyallup Branch 25 miles from Tacoma, and six miles short of its southeastern terminus, and will thence deflect to the east, and cross the Cascade Mountains, by one of the passes near the head waters of the Yakima River, down which it will proceed to Wallula. It is claimed that this route will be a great saving to the Northern Pacific, as it will be a cut-off compared with the route by Portland and Dalles, and also because miles of the road are already built. The Portland people fear that this line will be preferred to the one down the Columbia River to Portland.

Ocmulgee & Horse Creek.—This road is now completed from the Ocmulgee River seven miles into the pine woods of Telfair County, Ga. Several short branches are being built, but these are only temporary, and are to be taken up and relaid as required. The main line will be extended also as business demands. The road is the property of the Georgia Land & Lumber Company, and is to be used chiefly to carry lumber.

Ohio & Mississippi.—Receiver King's report for the month of December is as follows:

Cash balance, Dec. 1.....	\$38,428
Receipts from the road	375,179
Total.....	\$413,607
Vouchers, etc., prior to Nov. 17, 1876.....	\$2,366
Vouchers, pay-rolls, etc., subsequent to Nov. 17, 1876.....	313,586
	315,952

Balance, Jan. 1.....\$97,655
The receipts for the month were \$59,227 in excess of the disbursements.

Olean, Bradford & Warren.—The track of the Pennsylvania section of this road has been completed to the New York State line, 4½ miles east by north from the late terminus at Tarport, Pa., and 9¼ miles from Bradford. This completes the line of 22 miles from Bradford, Pa., to Olean, N. Y., where the road connects with the Buffalo, New York & Philadelphia.

Arrangements are being made to consolidate the New York and Pennsylvania companies, which are separate organizations, although both have the same name.

A survey has been begun for an extension from Bradford, Pa., west by south to Warren, about 35 miles. At Warren connection would be made with the Philadelphia & Erie.

Omaha & Southwestern.—Notice is given that under the provisions of the traffic contract between this company and the Burlington & Missouri River in Nebraska, the sum of \$383,275.96 is now applicable to the purchase of Omaha & Southwestern bonds at not over par and accrued interest. Proposals for the sale of bonds to the trustees will be received until March 12, at the office of John N. Denison, Treasurer, in Boston.

Pensacola.—A suit for foreclosure of the mortgage on this road has been begun, and the Court has appointed as Receiver Mr. W. D. Chipley, for some time past General Manager of the road. It is understood that the foreclosure proceedings are merely formal and intended to perfect the title to the property. The road is 45 miles long, from Pensacola, Fla., north to a junction with the Mobile & Montgomery near Pollard, Ala.

A considerable amount of cotton, some 10,000 bales, has been shipped from the port of Pensacola this season, and several cargoes more are promised. There have also been some shipments of flour and other freight, which, like the cotton, are due chiefly to the efforts of Mr. Chipley to draw business to his road. The shipments from Pensacola have been heretofore confined to lumber.

Philadelphia & Erie.—At the annual meeting in Philadelphia, Feb. 11, the stockholders voted to postpone action on the reports presented until another meeting, to be held on the 16th of May next, for the reason that a suit in equity is pending in the courts to test the validity of the preferred stock held by the Pennsylvania Railroad Company, which, by act of the Legislature, is given equal rights with the bonds, and on which, since its issue, 8 per cent. has been allowed, notwithstanding the fact that the company has not earned it. It was objected that it was not proper to accept a report recognizing the payment of interest on a preferred stock while a question was pending as to its validity.

Philadelphia & Reading.—This company has, it is said, decided to publish regular monthly reports of its business hereafter. The December report gives gross receipts as follows:

	1877.	1876.	Inc. or Dec.	P. c.
Railroad traffic.....	\$1,206,434	\$793,108	Inc. \$413,326	52.1
Canal traffic.....	16,144	7,867	Inc. 8,277	104.8
Steam colliers.....	63,604	40,281	Inc. 23,323	58.0
Richm'd coal barges	17,821	5,057	Inc. 12,764	250.3
Total Rail'd Co. \$1,304,003		\$846,313	Inc. \$457,690	54.1
Coal & Iron Co. receipts.....	795,868	473,651	Inc. 322,217	68.0
Total, both companies.....	\$2,099,871	\$1,319,964	Inc. \$779,907	59.1
Tons coal on rail'd.....	647,727	418,032	Inc. 229,695	55.0
Tons freight on rail'd.....	231,187	239,666	Dec. 8,479	3.5
Passengers carried.....	522,026	523,360	Dec. 1,334	0.3
Tons coal on steam colliers.....	47,842	30,512	Inc. 17,330	56.8
Tons coal mined.....	361,829	198,411	Inc. 163,418	82.4
By Coal & Iron Co.....	108,965	86,938	Inc. 22,027	25.3
By tenants.....				
Total.....	\$470,794	\$285,349	Inc. \$185,445	65.0

The coal traffic for the month was almost the largest ever carried.

Pittsburgh, Wheeling & Kentucky.—This road has now all the track laid to the depot in the city of Wheeling, and the ballasting is nearly finished. It extends from Wheeling Junction, W. Va., on the Pittsburgh, Cincinnati & St. Louis, near the east end of the Steubenville bridge, southward down the Ohio River to Wheeling, 24 miles. It will be worked by the Pittsburgh, Cincinnati & St. Louis Company.

Portland & Ogdensburg, Vermont Division.—From a statement made by the Treasurer it appears that the liabilities include \$94,000 preference bonds sold and \$314,000 pledged as security for notes given for iron; \$1,457,800 first-mortgage bonds sold and \$842,200 pledged; \$32,000 consolidated and \$149,000 second-mortgage bonds pledged; \$486,772 notes, bills, pay-rolls and similar claims; \$234,000 overdue coupons, and \$434,000 balances due other roads, agents, etc., making \$4,043,772 in all. The amount realized from stock subscriptions was \$1,022,000, and there is \$55,500 in uncollected subscriptions. There are many small claims for ties, labor, right of way, etc., the non-payment of which causes much suffering and discontent along the line of the road.

River Falls & Hudson.—The old project for a railroad from River Falls, Wis., northwest to the West Wisconsin at Hudson, about 18 miles, has been revived, and a considerable amount of subscriptions to the stock have been secured.

Southern Minnesota Extension.—This lately organized company, which purposed extending the Southern Minnesota road from Winnebago, Minn., westward, is trying to secure the land grant offered for that part of the road. In this it is opposed by the Southwestern Railroad Company, which was organized some time ago for the same purpose, and which claims to have eight miles of road already graded. Quite a lively contest is now going on between the two companies in the Minnesota Legislature.

Southern Pacific.—The San Francisco Post says: "It is denied by the officers of the Southern Pacific Railroad that the company has large quantities of building material stored at Yuma. At Wilmington and Los Angeles it has quantities of ties, and within reach a large lot of iron, but the material will not be sent into Arizona until Congress confirms the action of the Legislature in granting the company the right of way through the territory. There is no intention to build a road without a charter, nor to store much material at Yuma, until some assurance is given of congressional acquiescence in the acts of the Arizona Legislature. Whenever Congress decides to allow the territory to legislate for itself, the Southern Pacific Company will immediately extend the road from Yuma to Maricopa Wells, a distance of 178 miles."

St. Louis & San Francisco.—Proposals will be received by Wm. F. Buckley, Treasurer, at the office in New York until March 1 for the sale to the company of \$50,000 of the South Pacific first-mortgage land grant construction bonds. The bonds are to be canceled.

St. Paul & Pacific.—It is announced from St. Paul, Minn., that the purchase of the majority of the bonds of this company by parties in Canada and Minnesota has been completed. The purchase, of which we have several times made mention, includes about two-thirds of the bonds, and the intention of the purchasers is to foreclose the mortgages at once and buy in the property. Until this foreclosure can be completed the road will remain in possession of the trustees. The purchasers, who are represented in Minnesota by Norman W. Kittson and James J. Hill, of St. Paul, intend to complete the St. Vincent Extension through to Pembina as soon as possible, in order to make connection with the Canadian Pacific branch to Manitoba.

Texas & Pacific.—Arguments on the subsidy question before the Committee of the House of Representatives at Washington were continued last week. The subsidy was opposed by the representatives of the Southern Pacific, and the hearings were enlivened by some sharp skirmishing between Col. Thomas A. Scott for the Texas & Pacific, and Mr. C. P. Huntington for the Southern Pacific. It cannot be said that anything new was advanced or any arguments put forth that have not been repeatedly used before. The arguments are now closed.

Toledo & Woodville.—The City Council of Toledo, O., has voted to sell the city's interest in this road to the Pennsylvania Company for \$225,000. The road extends from Toledo to Woodville, 18.6 miles and is worked by the Pennsylvania Company as a part of its Toledo Branch. By this purchase the lessee will acquire absolute control of the line. The rest of the Toledo line, from Mansfield to Woodville, is owned by the Northwestern Ohio Company.

Towanda & Binghamton.—It is proposed to build a railroad from Towanda, Pa., northeast to Binghamton, N. Y., about 40 miles, and it is said that a large part of the money required has been promised. The proposed route extends from Towanda up the Wysox Creek to the Summit, and thence to Apalachin, in Tioga County. From Apalachin it is proposed to follow the tow-path of the abandoned Chenango Extension Canal to Binghamton. The same, or nearly the same, line was surveyed several years ago for the projected Binghamton, Dushore & Williamsport road, but nothing further was ever done.

Vermont Valley.—The differences between this company and the Central Vermont have been finally adjusted and traffic from the Central Vermont lines will hereafter pass over the Valley road as heretofore. The terms of the settlement have not been made public.

It was once before reported that the trouble had been settled, but it broke out again in a few days. The present settlement is stated positively to be final and complete.

Washington & Ohio.—In the suit of McComb and others against this company, the Virginia Circuit Court has granted the petition of the plaintiffs and has appointed a receiver, selecting for that office Cassius F. Lee, a director of the company. The road extends from Alexandria, Va., to Round Hill, 51¼ miles; it was formerly the Alexandria, Loudon & Hampshire, and the present suit grows out of transactions connected with the reorganization several years ago.

Winona & Southwestern.—This company offers to build a narrow-gauge road from Winona, Minn., west by south to Chatfield, about 35 miles, provided the people along the line will raise \$200,000, in town or county subscriptions.

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Galveston, Houston & Henderson.

This company owns a line from Galveston, Texas, northwest to Houston, 50 miles. It is the only rail connection between the railroad system of Texas and the chief sea-port of the State.

The road is equipped with 21 engines; 9 passenger and 6 baggage cars; 279 freight and 11 service cars.

There is a bonded debt of \$1,500,000, or \$30,000 per mile. The figures given below are from statements for the year ending Dec. 31, 1877, made at the recent annual meeting. The passengers and freight carried were:

	1877.	1876.	Decrease.	P. c.
Passengers carried.....	68,192	88,317	20,125	22.8
Tons freight carried.....	160,344	207,238	46,894	22.6

The road has comparatively little local business, most of the traffic passing over the whole line. The earnings for the year were:

	1877.	1876.	Inc. or Dec.	P. c.
Passengers.....	\$123,529.58			
Freight.....	300,168.08			
Express, mail, etc.....	30,606.90			
Total.....	\$454,304.56	\$581,772.98	Dec. \$127,468.42	21.9
Expenses.....	275,624.42	272,356.35	Inc. 3,268.07	1.2
Net earnings.....	\$178,680.14	\$309,416.63	Dec. \$130,736.49	42.3
Gross earn. per mile.....	9,086.09	11,635.46	Dec. 2,549.37	21.9
Net earn. per mile.....	3,573.60	6,188.33	Dec. 2,614.73	42.3
Per cent. of expenses.....	60.67	46.81	Inc. 13.86	29.6

The great decrease in earnings is due probably to the efforts made to divert the Houston & Texas Central business from the road, and the establishment of the route from Houston to Clinton, to which point steamers can carry freight without transfer. The Morgan steamer lines now run to that point, and deliver their freight to cars there.

Indianapolis, Bloomington & Western.

This company owns a main line from Indianapolis, Ind., to Pekin, Ill., 202.28 miles, which is extended from Pekin to Peoria, 9.22 miles, by the leased Peoria & Springfield road, making the line 211.5 miles long; and the Western Extension, which includes a line from Champaign, Ill., to Havana on the Illinois River, 100.63 miles, and a branch from White Heath to Decatur, 30.91 miles, 131.54 miles in all. The property is in the hands of Gen. George B. Wright as Receiver under suits for foreclosure of mortgage, and his latest report to the Court covers the year ending Nov. 30, 1877.

The road is equipped with 45 engines; 37 passenger and 15 baggage, mail and express cars; 720 box, 117 stock, 171 coal, 104 flat and 26 caboose cars; 32 service cars. A number of box cars are also hired.

The funded debt amounts to \$6,500,000 (not including overdue coupons) on the Main Line, and \$5,500,000 on the Western Extension. The two parts of the road will probably be reorganized separately.

The work done for the year was as follows:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Train mileage, passenger.....	467,380	567,445	Dec. 100,065	17.6
Train mileage, freight.....	700,315	931,195	Dec. 230,880	24.8
" " service switch.....	30,300			
" " 186,475		309,201	Dec. 92,426	29.9
Total.....	1,384,470	1,807,841	Dec. 423,371	23.4
Cost of locomotive service per mile.....	17.0 cts.	17.9 cts.	Dec. 0.9 ct.	5.0
Passengers carried.....	241,081	287,240	Dec. 46,159	16.1
Passenger mileage.....	11,833,049	13,749,208	Dec. 1,916,159	13.9
Tons freight carried.....	412,582	517,588	Dec. 105,006	20.3
Tonnage mileage.....	53,412,152	66,065,767	Dec. 12,653,615	19.2
Av. pass. train load, No.....				
Av. fr't train load, tons.....	25.30	24.25	Inc. 1.05	4.3
Av. receipt per passenger per mile.....	3.16 cts.			
Av. receipt per ton mile.....	1.43 "	1.48 cts.	Dec. 0.05 ct.	3.4
Of the tonnage mileage 25.6 per cent. was of through business. The average rate per ton per mile on through freight was 0.97 cent; on local freight, 1.61 cents. The decrease in business was due partly to poor crops on the line, and partly to loss of through business.				

The earnings of the main line, 211.5 miles, were as follows:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Passengers.....	\$331,109.94	\$380,501.38	Dec. \$49,391.44	13.0
Freight.....	672,650.01	853,250.54	Dec. 180,599.53	21.2
Ex. and mail.....	27,328.11	36,019.62	Dec. 8,691.51	24.1
Miscellaneous.....	106,802.33	102,249.00	Inc. 4,553.33	4.5
Total.....	\$1,137,890.39	\$1,372,020.54	Dec. \$234,124.15	17.1
Expenses.....	788,328.45	1,035,438.08	Dec. 247,109.63	23.9
Net earnings.....	\$349,561.94	\$336,582.46	Inc. \$12,979.48	3.9
Gross earn. per mile.....	5,380.12	6,487.09	Dec. 1,106.97	17.1
Net earn. per mile.....	1,652.80	1,591.41	Inc. 61.39	3.9
Per cent. of expenses.....	69.28	75.47	Dec. 6.19	8.2

Other payments from net earnings were as follows:

Rental of equipment.....	\$70,151.65
Trucks.....	48,345.54
Right of way, new construction and equipment.....	60,665.97
Extraordinary repairs.....	16,738.31
Total.....	\$195,901.17

The earnings and expenses of the Western Extension, 131.54 miles, were:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Gross earnings.....	\$143,344.24	\$186,397.35	Dec. \$43,053.11	23.1
Expenses.....	188,451.03	192,743.51	Dec. 4,292.48	2.2
Deficit.....	\$45,106.79	\$6,346.16	Inc. \$38,760.63	610.8
Gross earn. per mile.....	1,080.74	1,417.04	Dec. 327.30	23.1
Per cent. of expenses.....	131.47	103.40	Inc. 28.07	27.1

Repairs of road for the year include 1,515 tons re-rolled iron and 415 tons steel rails, and extensive repairs to bridges and other works. The sum of 41,703.36 has been paid for taxes due in Illinois, the amount being raised on Receiver's certificates. The payment of some \$97,000 more taxes has been enjoined, pending the decision of a suit now in the Illinois Supreme Court.

There were at the close of the year 192,425 Receiver's certificates outstanding. Financially the trust is reported in good condition. A statement covering the three years of the receivership is as follows:

Earnings from all sources.....	\$4,176,587.50
Working expenses.....	\$3,122,560.77
Rentals.....	568,197.83
Net earnings.....	\$485,828.90
Realized from Receiver's certificates.....	339,175.04
Total.....	\$825,004.54
Extraordinary repairs.....	\$455,036.02
New work.....	22,856.89
Right of way claims.....	35,076.22
New equipment.....	121,560.63
Taxes in Illinois.....	41,703.26
Receiver's certificates paid.....	146,750.64
	822,963.66

Balance.....\$2,020.88
November pay-rolls, bills and vouchers.....201,868.00

Total to be accounted for.....	\$203,888.88
Cash.....	\$73,523.23
Materials on hand.....	48,636.19
Accounts and balances due.....	81,729.46
	\$203,888.88

During the three years the road-bed has been raised from a miserable to a very good condition; 4,934 tons re-rolled iron rails, 3,824 tons new iron rails and 1,330 tons steel rails have been laid; seven miles of new sidings have been built; two bridges and 110 cattle-guards have been built new and 121 bridges and culverts rebuilt; two round-houses have been built and a large number of smaller buildings. The entire equipment has been repaired or rebuilt. Both road and equipment are now in good condition.

Wilmington, Columbia & Augusta.

This company operates the following lines: Miles.

Wilmington, Columbia, & Augusta, Wilmington, N. C., westward to Columbia, S. C.....	189
Wilmington & Weldon Railroad, leased:	
Wilmington, N. C., northward to Weldon.....	161.25
Branch, Rocky Mount, N. C., to Tarboro.....	17.75
Total.....	368

The accounts of the two companies are kept and stated separately. The report is for the year ending September 30, 1877.

The car equipment of the Wilmington, Columbia & Augusta road, consists of 1 parlor, 6 first-class passenger, 1 combined first and second-class passenger, 2 second-class

passenger, 3 baggage and passenger, and 7 baggage, mail and express cars; 203 box, and 93 platform cars; 5 shanty and 1 wrecking car.

The general account of the company is as follows:

Capital stock (\$1.587 per mile).....	\$300,000.00
Funded debt (\$22.476 per mile).....	4,248,000.00
Bills payable due Southern Railway Security Co.....	826,000.00
Other bills and accounts payable.....	182,944.5
Total (\$29,402 per mile).....	\$5,556,944.54
Road and equipment (\$25,923 per mile).....	\$4,992,540.55
Stocks and bonds.....	30,220.74
Cash, materials and balances due.....	204,235.33
Profit and loss.....	329,947.92
Total.....	\$5,556,944.54

The funded debt consists of \$3,200,000 first mortgage bonds; \$336,000 certificates of indebtedness, issued for funded coupons; \$112,000 unpaid coupons, and \$600,000 income bonds.

The earnings of the line owned for the year were as follows:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Passengers.....	\$113,983.26	\$130,455.29	Dec..	22,472.03
Freight.....	367,398.47	364,056.05	Inc..	3,342.42
Express, mails, etc.....	36,843.97	31,799.77	Inc..	5,044.20
Total.....	\$518,225.60	\$526,311.11	Dec..	\$14,085.51
Expenses.....	430,595.75	415,677.18	Inc..	14,917.57
Net earnings.....	\$87,630.85	\$110,633.93	Dec..	\$29,003.08
Gross earn. per mile.....	2,741.93	2,816.46	Dec..	74.53
Net earn. per mile.....	463.66	617.11	Dec..	153.45
Per cent. of expenses.....	83.00	78.12	Inc..	4.87

The income account for the year was follows:

Assets, Oct. 1, 1876.....	\$301,935.45
Receipts of road.....	518,225.60
Interest received.....	106.75
Increase of debt.....	121,686.39
Total.....	\$941,954.19
Working expenses.....	\$430,594.75
Construction and property account.....	50,857.62
Accounts charged to profit and loss.....	533.95
December coupons, funded in certificates.....	112,000.00
June coupons, carried to funded debt.....	112,000.00
Interest on certificates and current interest.....	31,732.54
Total.....	737,718.86
Assets, Oct. 1, 1877.....	\$204,235.33

The items carried to construction account were \$29,371.74 for Florence shops; \$18,859.90 for filling trestles, and \$2,625.98 for new connection with Charlotte, Columbia & Augusta at Columbia.

There were 1,708 tons of steel rail, and 75,198 ties put in the track. Only 36 miles of old short rail remain, and when that is replaced the current renewals will be small. Black cypress ties are now used as being much more durable than pine, although their first cost is greater. The work of filling trestles has been continued at the Watercrest. The draw of the Pee Dee bridge has been renewed. In filling trestle Wedgefield grade, the heaviest on the road, is being considerably decreased.

The locomotive mileage for the year was: Passenger, 243,478; freight, 219,190; gravel and construction, 26,096; switching, 43,521; total, 532,285 miles, the average cost being 12.95 cents per mile run. The passenger equipment has been fitted with the Westinghouse brake.

The receipts on freight were well maintained, but passenger travel fell off considerably. There was an increased production of grain and meat on the line of the road, and for the first time since the war some shipments were made to markets beyond the line of the road. It is hoped that expenses can be considerably reduced as the trestles are filled in and the old rails replaced, which will diminish the charges for renewals, which have been very high on account of the poor condition of the road when taken by the present company. The new shops at Florence are in successful operation and will enable the company to repair its equipment in a better manner and at less cost. The new connection at Columbia will effect a saving of about \$3,500 in cost of transfers.

Reference is made to local complaints as to the unavoidable difference between through and local rates. The report also speaks of the very insufficient return on the capital invested earned by this road, as by many others.

WILMINGTON & WELDON.

The car equipment of this road consists of 11 first and 8 second-class passenger, 3 parlor, 1 postal and 9 baggage, mail and express cars; 221 box and 129 platform cars; 1 paymaster's and 20 gravel cars.

The general account is as follows:

Stock (\$8.135 per mile).....	\$1,456,200.00
Funded debt (\$9.045 per mile).....	1,619,100.00
Bills and accounts payable.....	145,066.31
Profit and loss.....	269,727.44
Total (\$19,503 per mile).....	\$3,490,093.75
Road and equipment (\$18,655 per mile).....	\$3,339,206.13
Stocks owned.....	13,900.00
Cash, materials, bills and accounts due.....	137,884.62
Total.....	3,490,093.75

The earnings for the year were as follows:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Passengers.....	\$160,861.07	\$201,738.09	Dec..	\$40,877.02
Freight.....	341,443.39	359,165.40	Dec..	17,722.01
Express, mails, etc.....	46,157.65	43,795.31	Inc..	2,362.34
Total.....	\$548,462.11	\$604,698.80	Dec..	\$56,236.69
Work'g exp's.....	340,107.70	365,721.66	Dec..	25,613.96
Net earnings.....	\$208,354.41	\$238,977.14	Dec..	\$30,622.73
Gross earn. per mile.....	3,064.03	3,378.21	Dec..	314.18
Net earn. per mile.....	1,163.09	1,335.07	Dec..	171.08
Per cent. of exps.....	62.10	60.48	Inc..	1.62

The income account for the year was as follows:

Assets, October 1, 1876.....	\$91,451.75
Earnings of road.....	548,462.11
Interest received.....	866.38
Increase of debt.....	114,648.97
Total.....	\$755,429.21
Working expenses.....	\$340,107.70
Extraordinary expenses.....	51,446.88
Construction and property accounts.....	10,968.71
Interest on bonds, etc.....	113,330.30
Rental dividends, 7 per cent.....	101,660.00
Total.....	617,544.59
Assets, October 1, 1877.....	\$137,884.62

The extraordinary expenses were for Westinghouse brakes on passenger equipment; new buildings; stone arch bridge to replace wooden bridge over Quaker Creek; increase in rail renewals and in cost of cypress over pine ties. Deducting extraordinary expenses, the net earnings were \$156,907.53, or \$58,083.77 less than the rental paid.

The locomotive mileage was: Passenger, 225,764; freight, 205,493; service, 30,632; switching, 33,173; total, 495,060 miles, at an average cost of 12.15 cents per mile.

Renewals included 201 tons of iron and 1,509 tons of steel rails and 56,968 new ties. The small trestles on the line are being filled in, and the ballasting of the road is nearly completed. The wharfs at Wilmington are being gradually extended.

Philadelphia, Wilmington & Baltimore.

This company owns a double-tracked line from Philadelphia to Baltimore, 95.31 miles; an extension (formerly known as the Southwark Railroad), 1.72 miles long, to the Delaware River in Philadelphia; a branch from Ferryville to Port Deposit, Md., 3.79 miles; and the Southern Division, from near Wilmington, Del., to the junction with the Delaware Railroad, 11.61 miles, making 112.43 miles in all. It also works under lease the Delaware Railroad, 85.5 miles, but the accounts of that road are kept separately. The Southwark Railroad was formerly owned by a separate company, and the Southern Division by two companies, the New Castle & Wilmington and the New Castle and Frenchtown. Last year these three companies were finally merged in the Philadelphia, Wilmington & Baltimore, which already held all their stock. The 40th annual report of the company covers the year ending Oct. 31, 1877.

The equipment consists of 78 engines; 2 parlor, 4 chair, 120 passenger, 15 smoking and baggage, 1 postal, 23 baggage and mail, 17 express and 4 milk cars; 672 box, 76 stock, 308 platform, 50 lime, 34 dump and 77 lumber truck cars; 1 pay and 14 service cars.

The general balance sheet is as follows:

Stock (\$102.857 per mile).....	\$11,564,250.00
Funded debt (\$27.190 per mile).....	3,056,916.66
Interest and dividends.....	130,140.32
Balance of renewal fund.....	147,912.48
Balance to credit of revenue account.....	644,303.74
Total (\$138.251 per mile).....	\$15,543,523.20
Road and equipment (\$115.834 per mile).....	\$13,025,161.71
Stock in Delaware and connecting roads.....	535,476.30
Real estate not required for the road.....	368,475.05
Assets, securities, wood-lands, sinking fund, etc.....	1,067,380.57
Advances to connecting roads.....	146,979.49
Materials and fuel.....	224,332.28
Cash.....	75,737.80
Total.....	\$15,543,523.20

The stock was increased \$3,000 by the conversion of bonds. The funded debt consists of \$262,000 convertible and \$2,500,000 mortgage bonds; \$134,916.66 ground rents and land mortgages; \$100,000 notes given in payment for Baltimore property and \$80,000 ten-year notes for Queen Anne's & Kent stock. It all bears 6 per cent. interest. The cost of the roads merged is reported at \$361,970.92.

The earnings and expenses for the year were as follows:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Passengers.....	\$1,698,782.99	\$2,358,080.10	Dec..	\$659,297.11
Freight.....	1,131,772.26	1,000,677.66	Inc..	131,094.60
Mails, etc.....	47,835.25	33,000.60	Dec..	6,074.35
Rents.....	37,859.50	43,468.83	Dec..	5,609.33
Delaware R.R. lease.....	2,211.38	.....	Inc..	2,211.38
Total.....	\$2,918,461.38	\$3,436,136.19	Dec..	\$517,674.81
Expenses.....	1,663,441.75	1,757,091.45	Dec..	93,649.70
Taxes.....	91,592.75	77,790.77	Inc..	13,801.98
Total.....	\$1,755,034.50	\$1,834,882.22	Dec..	\$79,847.72
Net earnings.....	\$1,163,426.88	\$1,601,253.97	Dec..	\$437,827.09
Gross earn. per mile.....	25,958.03	30,740.34	Dec..	4,782.31
Net earnings per mile.....	10,348.01	14,420.12	Dec..	4,072.11
Per cent. of exp.....	57.00	50.84	Inc..	6.16
Per cent. of exp. and taxes.....	60.14	53.09	Inc..	7.05

The earnings and working expenses were divided as follows:

	Earnings.	Expenses.	Net earn.	Earn. P. c. of per mile. exp.
Main L. & Port Deposit B. R. \$2,761,055.47	\$1,554,805.58	\$1,206,249.89	\$27,386.56	31.31
Southern Division 155,194.53	108,636.17	46,558.36	13,367.70	10.00
Total.....	\$2,918,461.38	\$1,755,034.50	\$1,163,426.88	40.21
Net earnings.....			\$1,163,426.88	
Interest paid and accrued.....			\$211,918.80	
Less interest and dividends received and accrued.....			122,313.16	
Net receipts.....			\$1,073,822.24	
Dividends, 8 per cent.....			\$924,900	
Placed to credit of renewal fund.....			50,000	
Total.....			974,900.00	

Surplus for the year..... \$98,921.24

The renewal fund stands as follows:

Balance, Oct. 31, 1876.....	\$296,456.56
Expended during the year, less credits.....	198,544.08
Balance.....	\$97,912.48
Carried to credit from year's earnings.....	50,000.00
Balance, Oct. 31, 1877.....	\$147,912.48

The largest item of expenditure for the year was \$121,744.07 for the Susquehanna bridge. Of the 13 spans in this bridge 11 have been renewed in iron, one is to be renewed in 1878, and the draw-span will not need renewal until 1879. One new pier was built last year. The original cost of this bridge was \$2,268,983.19, and the renewals so far have cost \$449,877. The usual repairs and renewals of small bridges and stations have been made. The steel rails laid last year leave but 14.55 miles of iron track on the road, and this will be replaced with steel in a year or two. The entire cost of the steel has been charged to operating expenses.

During the year the company bought a valuable tract of land with water-front adjoining its track in Baltimore, at a cost of \$183,000. A purchase was also made of a controlling interest in the Queen Anne's & Kent road for \$80,000.

The mileage made by the company's locomotives for the year was as follows:

	Main Line.	Southern Div.	Delaware R. R.
Passenger trains.....	899,899	32,202	95,923
Freight trains.....	648,430	42,266	171,272
Service trains.....	36,495	674	4,422
Total.....	1,584,824	75,142	270,717

The fruit traffic for four years' past has been as follows:

	1876-77.	1875-76.	1874-75.	1873-74.
Car-loads peaches.....	4,063	2,117	9,072	1,296
Car-loads berries.....	638	882	965	714
Weight in tons.....	37,100	24,455	92,068	18,102
Total earnings.....	\$201,644.12	\$125,980.44	\$316,528.22	\$100,665.44
P. W. & B. prop. 107,214.99	73,188.89	194,320.49	60,496.64	
Del. R. R. 94,429.13	52,800.55	122,207.73	40,168.80	

The traffic is a profitable, but a very fluctuating one. The change last year from the contract system of car service proved to be an improvement both for the road and for shippers.

Concerning the strikes of last summer the report says: "During the whole period of strikes and mob violence, your employees neither sympathized with the strikers nor were overawed by the rioters. The running of trains of all kinds, even those loaded with United States troops on the way to the scenes of disturbance, was regular as usual. This loyalty to the company was fully trusted in by your managers, and during those trying days no apprehension was felt by them of any bad conduct on the part of their employees. Trouble with rioters unconnected with the road was expected and guarded against; but, if it had arisen, your officers would have had no more faithful allies than their own men."

"While your board feel that great credit is due to your employees in this connection as in others, yet they have refrained from any public recognition of their loyalty."

"With such men as these any praise for doing what they deem their duty might be construed into an affront. But your officers and employees will work together as harmoniously as ever; and the pleasant relations judiciously maintained by Superintendent Kenney and his staff between the employees and themselves (which relations had much more to do with our exemption from strikes than any question of wages) will be fostered with greater care than ever."

Delaware.

This company owns a line from Delaware Junction, Del., southward through the centre of the State to Delmar, 84.25 miles, connecting at that place with the Eastern Shore Railroad. It owns branches from Smyrna Junction to Smyrna, 1.25 miles; Townsend to Massey's, 9 miles, and Seaford to the Maryland line, 6 miles. The Townsend Branch is leased to the Queen Anne's & Kent and the Seaford Branch to the Dorchester & Delaware. The road owned is 100.5 miles; worked, 85.5 miles. The road is operated by the Philadelphia, Wilmington & Baltimore Company for 70 per cent. of the gross earnings; the lessee pays all interest and 6 per cent. dividends from the remaining 30 per cent., a deficiency in any year to be made good from the surplus of following years.

For the year ending Oct. 31 the train mileage was as follows:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Passenger.....	95,023	108,837	Dec..	13,814
Freight.....	171,272	155,294	Inc..	15,978
Service.....	4,422	5,008	Dec..	1,186
Total.....	270,717	269,139	Inc..	978

The earnings for the year were as follows:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Passengers.....	\$134,531.45	\$157,729.82	Dec..	\$23,198.37
Freight.....	273,123.64	220,618.18	Inc..	52,505.46
Mails, etc.....	12,150.75	13,730.87	Dec..	1,580.12
Total.....	\$419,805.84	\$392,078.87	Inc..	\$27,726.97
Paid lease for operating, 70 per cent.....	293,864.09	274,455.21	Inc..	19,408.88
Net earnings.....	\$125,941.75	\$117,623.66	Inc..	\$8,318.09
Interest and dividends.....	123,730.37	137,153.66	Dec..	13,423.29
Surplus or deficit.....	\$2,211.38	\$19,530.00	Dec..	\$17,318.62
Gross earn. per mile.....	4,910.01	4,585.72	Inc..	\$324.29
Net earnings per mile.....	1,473.00	1,375.72	Inc..	97.28

Repairs have been made on the road amounting to \$15,108. About 504½ tons of new rails have been laid during the year, and 33,149 new cross-ties put in. Several miles of new side track have been laid. A new engine house has been built at Clayton, a new station house at Smyrna; a rail repair shop at Dover. The passenger station at Harrington completed, and new freight depot and sheds erected at the same place, and new sheds, etc., at Seaford.

The report states that the fruit growers along the road had planted more peach trees this year than any previous year, showing that they were greatly encouraged by the result of last year's crop.

The company has made arrangements with the lessees to replace the iron rails on the road with steel rails as fast as the old rails are worn out.

The road is chiefly dependent upon the fruit and market traffic, and last year's better earnings resulted from the increase of peach shipments over the previous year. In 1876 there was a considerable passenger traffic to the Centennial. The sinking fund increased from \$26,496.77 to \$36,271.13 during the year.

The English Goods Manager and his Duties.

The Goods Manager is, *facile princeps*, the chief traffic manager, for, while railway companies are expected by their obligations to Parliament and the public to provide for the comfortable and safe transit of Her Majesty, Her Majesty's lieges, and the respected "foreigner," every one knows, and those interested in railway property better than any, that goods and mineral traffic pay best, and are, therefore, the chief sources of a company's revenue. They require no first-class accommodation, with warming-pans; no sleeping and drawing-room saloon cars; no first-class waiting-rooms; no elegantly equipped station superintendents; no expensive, illuminated posters, to invite or attract them; and no flying squadron of ticket collectors to intercept them at unexpected stations with "Tickets, please!" Excepting the case of live stock, which also comes under the Goods Manager's care, there is no need of "cleaners." Live-stock trucks, it is true, require washing out and disinfecting after every trip, as do the cattle-pens and sidings, but goods wagons and vans, and mineral trucks demand no attention except the inspection of wheels, axles, and buffers, for the safety of the line. If goods are "soft," or seriously damageable by water, they require stowage in covered vans; if less susceptible to injury by the elements they ungrudgingly put up with open wagons, and are content, even in mid-winter, with a water-proof sheet tied over them. They pay fair freights, and yet never complain of traveling in mixed company, and are as well pleased to make a long journey among straw or sawdust as if they had lain upon handsome Brussels rugs, with the company's crest or initials wrought into them. And, lastly, it seldom matters, except in the case of ill-natured, short-grained castings, whether the buffers are "dead" or "spring," whether the couplings are tight or loose, or the bearing-springs easy or rigid. The traffic, as a rule, comes out at the end of the journey looking marvelously fresh—much fresher, indeed, than the man who consigned the merchandise would be likely to appear after a similar amount of travel under circumstances so much more costly to the carrying company. All this is to say that, earning in many cases—nay, indeed, in nearly all—more revenue, at infinitely less cost, the goods and mineral traffic is the most important to the carriers, and, therefore, the first in value to the companies, and the Goods Manager demands our next attention.

Unlike the General Manager, the Goods Manager is purely an administrator. Receiving instructions from the General Manager, or direct from the board, he sets all the machinery of his department moving to perform his will. We have said there were, at the initiation of railways, pioneers, who had to form their own precedents and to invent their own machinery. The systems they inaugurated have done splendid service, and there still are traces of these in the *modus operandi* of modern management.

The half century of railway life which has passed since steam locomotion became a fact has, however, created new wants, laid bare the defects and deficiencies of original methods, and offered scope for the thoughtful teaching of experience of which ample advantage has been taken. The mantle of the pioneers has fallen upon the shoulders of capable men who have benefited by experience, and have been founding a college of instruction in railway science most invaluable to their young successors. The present generation of Goods Managers has almost entirely graduated in this school, and its constituent members, are, all unconsciously, the professors of a later school. Their assistants, of all grades, are silently but effectively catching inspiration and deducing lessons from their conduct of affairs; and thus, year by year, the solid fabric of a noble public institution is growing towards greater usefulness, and higher perfection. These remarks apply to all departments of the service, but they seem to us specially appropriate to the occasion of considering the case of the Goods Manager and his office.

In administering his office as chief of the goods, mineral and live-stock department, the Goods Manager, it will readily be understood, has heavy responsibility. It is true, he must be, and is, assisted by a staff of junior officers with sectional oversight, but that very division and subdivision of responsibility increases his own—for that is always best done which we do ourselves. This feeling of anxiety as to everything being done as he wishes, together with the constant reference to him for advice or instruction in difficulty, and the hindrance to consecutive consideration of subjects with which he must deal personally, are a serious strain upon the physical power of the man. He had, therefore, needs begin with robust health and temperate habits. If he adds to these those other almost indispensable gifts—activity and energy, much of the worry which wears out the nervous system will be avoided, as work disappears rapidly before both, and bores and stupids learn to respect his estimate of the value of time. It is amazing how little provocation some people require to induce them to intrude upon a busy man's time, and how difficult it is to awaken them to a sense of their thoughtlessness. We have known men of the rarest sweetness of disposition tried most severely in this way, and have admired the grace of manner with which their tormentors have been received; but we have frequently thought that a little wholesome gruffness would have prevented repetition of the offense. There can be no doubt, however, that a kindly, courteous, and amiable temperament, illuminates intellectual gifts, and elevates its possessor supremely above his fellows. In railway work of any kind it is extremely difficult to cultivate this; but it is always desirable to aim at it. Among personal qualifications for the high office of Goods Manager, one of the chief is that of a good address. He has to urge his views upon the acceptance of the Board, or to defend his administration before them, to explain his company's policy with reticent caution at conferences, to excuse his company to angry traders in cases of neglect of their wishes, or when compelled to say "no" to their demands; and all this while conscious of the result of offending either, or all. Clear views, fullness of knowledge, quickness of perception and apprehension, and the activity and energy to which we have alluded, are the characteristics of the best of our goods managers. Some of these are gifts, and may not be bought, in their highest excellence, by practice or experience. We think, however, that much headway in all may be made by even dull men, willing to attain to the highest perfection, and—*trying*.

An essential to good management is a full and accurate knowledge of the geographical position of the particular company's lines and branches, with a fair acquaintance with those of neighboring and competing companies. Allied to this, there should be a careful study of the products of each district, its mineral, agricultural and manufacturing wealth, and the markets for these; also some attention to the needs of the population living in the districts served by the lines, and the sources of their supply, will be found useful. Whenever opportunity offers, the same kind of study of a neighboring company's territory, its possibilities and requirements, should prove beneficial, because, apart from aggressive or competing measures which such knowledge may foster, each company may be helpful to the other in fair barter of traffic. Next to an acquaintance with the districts over which he rules, the Goods Manager must possess some knowledge of the various classes and scales of rates scheduled in his company's special Acts of Parliament, without which he would not be able to encourage trade over his lines. In these Acts, Parliament gives the company certain powers to levy tolls upon all kinds of traffic, classifying the traffic, and restricting the company to a maximum rate in each class. In fixing these rates Parliament had in view the cost of working the traffic; and it is not often that the maximum rate in any class is found unremunerative. Indeed, we may say that perhaps none would be more blameworthy in such an event than the company itself, since the various rates schedule, are the company's own figures, or at least agreed to by it in pressing for its bill. It is not always excellent, even where there is no competition, to charge the maximum rate; and, when competition steps in to share the chances of the traffic, it is often found necessary to reduce an already existing rate. Rates are also frequently modified to encourage a larger traffic, or because a large traffic, like a large wholesale order, demands a wholesale rate. The Goods Manager must know something of the cost of working—what it takes to make locomotive, wagon and wagon-cover earn their right to exist. With such data, and a consideration of the mileage and the work required in handling the goods at each end of the journey, he is in a position to say how much less than the highest rate allowed he may fix with a fair profit to the company, and a hope of encouraging the traffic. So far as purely local traffic—that is traffic passing from one station to another of the same company's territory—so long as neither station is in a town in which a neighboring company has a footing—is concerned, the Goods Manager is his own arbiter. If, however, the traffic is to pass to a town common to two or more companies, although it is sent from one to another station of the same company's system, the rate asked for can only be adopted on all the companies interested agreeing; or, in the case of traffic in which both English and Scotch companies are interested, the rate proposed can only be issued on submission to, and approval by, the Goods Managers' Conference in the Clearing House. In such cases—as in all matters affecting the interests of more than his own company—the Goods Manager has an excellent guide in the "Clearing House Regulations," a little book published annually by that most wonderful product of the railway system, the "Railway Clearing House." That little manual, every year growing more bulky, contains the essence of all he ought to know with regard to the interchange of traffic and the rights of competition; and it is essential that he

should be master of its leading principles: his assistants, in their several departments, will keep him right on points of detail.

Mention of the Clearing House reminds us of one of the many important duties devolving upon the Goods Manager. In virtue of his office he is a member of the Goods Managers' Conference, which sits in London, in the Clearing House premises, quarterly, for the discussion of all questions affecting the general railway traffic of the country. England and Scotland are represented in the institution in Seymour street, London, while Irish business is transacted after the same, or a nearly similar form, in Kildare street, Dublin. In the intervals of the meetings negotiations as to alterations in rates may be carried on with the companies interested. If all consent, the Clearing House, on receiving from the company with whom the proposal originated the letters of consent of the other companies, advises each officially of the adoption of the rate, and the date when it is to come into operation. These alterations are formally approved of and minuted at the next meeting of the Conference. Prior to the meetings, the companies supply the Clearing House with a list of subjects which they intend to submit for discussion, and, in return, the Goods Managers are furnished with a printed copy of the Agenda, or list of subjects to be brought before the meeting by the various companies, with the names of the proposers attached, so that each knows his neighbors' proposals, and goes up prepared to discuss them. This necessity for attending at the quarterly meetings tests the quality and fibre of the man; and according as he conducts his business, in urging the acceptance of his own suggestions, or criticising those of others, he makes or mars his legislative, his only legislative, reputation. He is also, in virtue of his office, liable to be appointed upon the Claims Arbitration Committee, which sits in the same premises, and is in session in the same week. This committee decides in all disputed claims between the companies interested, and also in cases of claims paid in alleged infringement of Clearing House rule, to make favor with traders in the hope of securing traffic from a competing route. The decision of the Conference and Committee are final and binding after they have passed the revising tribunals of the General Managers' Conference, the Clearing House Committee—consisting of delegates from the various Boards—and has received the approval of those Boards.

Some skill in arranging trains, and in the distribution of plant, is also called for in a model Goods Manager, although, so far as the latter is concerned, most of the companies have a responsible officer detailed to the duty, who has a *quasi* independent position, always, of course, subject to the command of the Goods Manager, who alone can know where plant, either goods, mineral, or live-stock, is most in demand. If not indispensable, it is a material advantage to the Goods Manager to have some slight general knowledge of manufactured goods, as he will then be in a position to judge of the fairness of claims made for their value when damaged—a most important function to exercise. This knowledge, like much else which an energetic man accumulates in his path through life, may be acquired by habits of observation, and the constant use of the faculty which is ceaselessly "wanting to know, you know." We do not promise that by such a process he can become a *manufacturer*; but we do say that he will learn as much of many articles of manufacture, many products of the loom, as will often enable him to put the manufacturer to rout in cross-examination. He should have some practical experience of accounts, in order to be able to see clearly and rapidly where it is useful to call the special attention of the Traffic Auditor, or Audit Accountant, to the examination of station accounts. And it is almost an indispensable characteristic of the Goods Manager that he should have the faculty of discerning character; without this he cannot well trust himself in the selection of his staff.

If the picture we have drawn be a fair one—and we leave it to our more advanced readers to say whether they cannot apply the leading features to men of their acquaintance in the railway service—may we not proudly hold the portrait before the eyes of our young friends as examples of what they may become by efficient study, and as incitements to the attainment of such possible capacity? He who aims at the moon may shoot one of the stars.

A Goods Manager, be he ever so capable, is like a great general without a well selected and well appointed staff, if he is not flanked by capable assistants. And every able man will feel his ability increased rather than lessened by the consciousness of having a body guard of young officers of education and attainments at his command on every occasion. He must have some one particular assistant, be he decked with the formal title of "Assistant Goods Manager," or merely acting in that capacity, unknown by any designation more high sounding than that of "chief clerk," who is ready and able to take his place in his frequent absence. If such an officer is carefully selected, he will manifest most of the qualifications of his chief, in being conversant with the wants of the traffic on the line, and the best means of fostering it. He will have good address, and an agreeable manner, be at home among the Clearing House rules, will be "guide, philosopher and friend" of the heads of departments in all matters of difficulty, and have discretion enough to know when to yield a point for policy's sake. Having the office staff under control, and the responsibility of the official machinery working smoothly resting upon him, he will discover in his management, the happy blending of firmness with suavity, of "justice tempered with mercy." He will be a good correspondent, a man of rapidity of thought, and of decision of character, methodical in habit, and a good supervisor and administrator. With respect to the staff of the Goods Manager's office, there is probably as great diversity in the mode of distribution of the work as in the style of its performance among the companies. We can only indicate, therefore, such general features as are common to all. "Rates" and "General Correspondence" are the principal divisions, the latter including everything not comprised in the former. The head of each of these divisions should be a capable administrator, and he should chiefly be a *specialist* in all that concerns his own department most particularly. The really efficient chief rates clerk knows his company's parliamentary limits and obligations, and those also imposed by the Clearing House; and if a new rate is wanted, or a modification of an old one is desired, he is the man to apply to. His books would form a fair library in the number of the volumes, but they would be liable to be neglected by the "general reader." The constant changes to which rates are subject, and the enormous variety of them, must render it, even to him who has to do with these changes, an almost perplexing puzzle to say which is the correct rate in any case. How much more perplexing must the quotation of one, in answer to the inquiry of a trader, be to the novice? Changes are not merely numerous, they are in some instances frequent, and unless every one of them is carefully engrossed quotation is difficult, and reference to the book unsatisfactory. That there should be anything unsatisfactory about the matter may be due to want of care on the part of the chief clerk in arranging the rate, or in issuing instructions to his assistants. It is most frequently due to carelessness or want of method in the assistants. In any case it may lead to confusion among the stations, and to infinite trouble with the traders. In this matter of rates the Goods Manager must depend upon the head of the department, who should know the line and its connections, with some

idea of its traffic. He should also be conversant with the classification of goods, a kind of information supplied in a handy form by the Clearing House. Furnished with such important data as this, together with that familiarity with the company's special powers to which we have referred, he is in a position to quote new rates where traffic is being developed, or to modify old where these have proved prohibitory; and he will, wisely, be allowed a large discretion in this, so far as purely local traffic is concerned, and often in the case of foreign traffic also if he is judged to be capable. Where two or more companies are concerned in the quotation of a new, or in the alteration of an old rate, it will be his duty to correspond with the interested companies for their sanction. If these companies and the special traffic are amenable to Clearing House rule, and the rate is to be recorded on the Clearing House minutes, it will be necessary for the company proposing the change to report the agreement between the engaging companies to the Clearing House for record. If, however, the traffic is local to a company, but that company's neighbors have a right to acquiesce or object to an alteration as being competitors for the traffic, the company proposing the change need only receive the sanction of those companies to the adoption of the change. This we have, practically, said already, but think it right to repeat it in this more detailed connection. If the man in charge of such negotiations is of the right fibre, he may, as we have said, be safely left to carry out these arrangements without reference to the Manager. Of course there are constantly arising great crucial questions between competitive companies involving much more than the single quotation upon which such issues are raised. Then the Manager conducts the discussion at the Managers' Conference as counsel, his rates clerk attending as agent, and advising. In all cases the Manager attends the quarterly meeting at the Clearing House, when he can, in person; sometimes he is prompted and assisted by his lieutenant, the rates clerk, and sometimes that invaluable assistant attends for him. When a rate is arranged, the first duty is to engross it in the Goods Manager's book, and from that to issue it to all stations concerned. That duty must be left to junior assistants, and, as we have said, it is most important that none but careful lads should be entrusted with it. In a great railway system the quantity of these issued daily must be very great, and this might be expected to lessen care. We believe, however, that, on the whole, there is little cause for complaint on that account. The amount of correspondence involved in the arrangement of rates is enormous, and, although it is often of a formal and stereotyped character, its very voluminousness must tax the energy and capacity of all concerned. There is not merely the quantity of penmanship to be got through; there is, previously, for the information of the clerk in charge, a certain amount of information to be collected from the books as to existing rates for that or some similar class of goods, or for that or some adjacent place, with consultation as to the proper group of stations with which the stations in question should be classed. All this occupies time, and it is no uncommon occurrence that men and lads, who have been straining every nerve to keep pace with the hours during the day, should, by force of such pressure of inquiry and investigation into a basketful of cases, be compelled to work late at night—nearly every night—to overtake the comparatively manual labor of writing the letters involved! Moreover, who is unfamiliar with the well-worn dispatch-bag which the chief clerk carries home full of papers which he has had no leisure to digest during the day, and brings back with him in the morning, the papers all dog-eared, with shorthand jottings for his assistants? But for shorthand, it would be impossible now-a-days to get through the mass of correspondence. By its means the Goods Manager dictates, and almost immediately, signs the most important letters; and the hard-working and almost overpowered heads of departments indicate in a few slight strokes of the pencil, for one and another of the staff, the gist of the reply each may make, after his own manner to this and that letter from the pile.

In the question of the value of shorthand in saving time where that is so precious, the department of "General Correspondence" may be readily understood to be equally interested. Here, also, the head is the almost hourly recipient of such heaps of letters, reports, etc., upon such a variety of subjects as the uninitiated have no conception of—claims, complaints, reports, and returns, of so heterogeneous a character as, if catalogued, would weary the reader. Among these the claims bulk most largely in quantity and demand a single word of notice. They are made for loss, or damage, or delay, and are founded on any or every pretext. The sender makes claim, or the receiver makes it. The claims clerk, often having a separate responsibility from that of the "General" department, has a staff of his own. He has to get at the particulars of entry and the stations' report of affairs. This his assistants do. If the damage is clearly traceable to his company the claim has to be admitted, and the only question is then the fair amount chargeable. If it is not so clearly traceable to his company, the claims clerk reports the claim to the connecting companies in the linked transit of the goods, and thereafter ensues a correspondence between the companies interested, which occupies time and delays settlement, to the disappointment and impatience of the claimant, who, not understanding the causes of delay, and declaring he has nothing to do with the dispute between the companies, not unfrequently drags the company nearest him into court and gains his case. Then comes an appeal to the "Claims Arbitration Committee" of the Clearing House, which is prepared by the company compelled to pay, and, as we have said, their decision is final. The claims clerk has usually a staff of inspectors of goods damaged in transit, who, in time, come to be very fair assessors of values, and are a most invaluable adjunct of this valuable arm of the Goods Manager's corps.

The head of the "General Correspondence" department has supervision of stations, in their accounting, so far as goods traffic is concerned, and in the carrying out of instructions as to special traffic agreements and arrangements. He is expected to arrange the changes of goods train runnings, to have charge of goods guards and inspectors, to look to the working of the goods trains, to look to the causes of decrease of traffic, if any, to receive canvassers' reports, and prepare the results for the Goods Manager's consideration, to keep the staff book, and to check the pay-bills; and, generally, to look after everything which affects the workings of the goods traffic. Not unfrequently, in the case of companies having very wide districts, with divided management or superintendence there is a periodical meeting of district goods managers or superintendents, and the head of the "General" department is the clerk of the periodical conferences, calling the meetings, and keeping minutes of the proceedings. The work which he has to perform is multifarious and onerous, and he and his staff must be intelligent, energetic and efficient.

In such a department as that of the Goods Manager, with so much responsibility and such various duty, a splendid field is open, and a young man entering upon such service has an honorable, if not learned, profession before him, the rewards of which are as fair as in any walk of life.—*The London Railway Sheet.*